SEPTEMBER
1922

VETERINARY MEDICINE

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VOL. XVII No. 9

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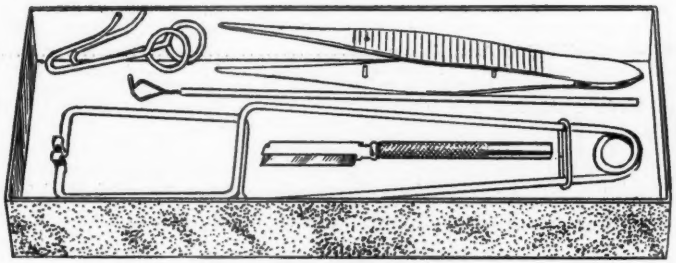

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Veterinary Medicine

Vol. XVII SEPTEMBER, 1922 No. 9

TRACTOR FARMING ALMOST A THING OF THE PAST IN THE NORTHWEST

This is only a part of the horse effectives on the farm of Hoffman Bros., Aberdeen, Saskatchewan, found plowing in one field by the reporter of Veterinary Medicine in July. The camera could not take them all and behind these are the reserves and the growing colts—the provisional replacements for coming years, produced at a cost that does not perceptibly swell the budget of the establishment.

On the Trail of the Tractor

A TRIP from Chicago into the Northwest as far as Saskatoon which takes one through the big-farming districts of North America as well as through the more congested regions of Illinois, Wisconsin and Minnesota where dairying and dairy-type breeding has reached a very high degree of refinement, probably the highest in this country, made with the view of determining first hand by observation and interview, the prevailing attitude of the modern farmer toward tractor farming, enables Veterinary Medicine to announce to its readers that the information gathered is of an exceptionally favorable character. In short, horse-farming is not becoming a thing of the past as predicted a few years ago but is regaining a popularity that is setting the horse more securely in the affairs of the agricultural industry than ever before. Everywhere among the experienced the tractor lacks popular approval as a profitable motive power for field work. And in many, many places it has had its carnival of glory to be abandoned as a thing to shun, as a horrible monument of ill-spent years of despair, wasted energy and financial calamity.

The journey beginning at Chicago traces its course through Milwaukee, Fond du Lac, Oshkosh, Marshfield, St. Paul, Emerson, Winnipeg, Portage la Prairie, Brandon, Regina, Hanley and Saskatoon, and the return journey was through the famous farm lands of southern Saskatchewan and North Dakota from Regina, Moose Jaw, Rathburn, Wilcox, Estevan, Portal, Minot and Hankinson to Minneapolis and thence to Chicago via La-Crosse, and Madison.

The observations were made by daytime trips on railroads and by auto through the fertile districts between Regina and the international boundary, during which many farmers were interviewed. At places the reporter impersonated a tractor salesman, at other times an organizer of stallion companies and in some instances posed as a neutral to bring out the desired information as a mere incident of a friendly conversation. And paradoxical as it may seem not a single exponent of tractor farming was found, and the only prospect for the sale of a tractor was met near Condie, Saskatchewan where two boys in the twenties were waiting for their father to retire so that they could replace their horses by machinery. The father had become wealthy at horse farming and expressed great anxiety for the success of his boys on account of this ambition, having been a witness of many a bankrupt victim of the tractor in his neighborhood while he was quietly piling up wealth with his reliable horse effectives.

During a day run on the Trans-Canada limited from Winnipeg to Regina, lasting from 10:45 A. M. to 7:35 P. M. a distance of 350 miles not a single tractor was seen in the fields

although everywhere farmers were busy cultivating the summer fallow. Large horse units were in evidence on all sides and no tractor marred the scenery. On the next day between Regina and Hanley one farmer was however seen plowing stubbles with a Fordson, and upon arrival at the most northern destination, the climax of the whole situation was strikingly shown in the amazing fact that there was no tractor exhibit at the Saskatoon Fair, one of the principal annual events of this kind in the province, while horses and horse races were attracting the usual old fashioned crowds in the old fashioned way.

In North Dakota and Minnesota with harvest in full sway only two tractor-drawn binders were seen as against hundreds of horse drawn ones, and in Wisconsin and Illinois where the farms are smaller the hard-boiled farmer who knows the severe limitations of farm income was found to be wary of the situation and in most instances was tolerating the tractor because it amuses the boys and keeps them on the farm. None of them, not even the young men, claim that it pays to replace the horses by automotive power. No, horseless farming is not becoming a reality, it is waning, waning fastest where it has been in operation the longest.

STOCK BIOLOGICS

There are many veterinarians practicing today who entered the profession before very much was known about the relations of bacteria to the cause of disease and who have had the opportunity to study the development of bactericidal therapy from the very beginning, from the chemical therapy of other decades to the present day serum and vaccine systems.

Practitioner Was Handicapped

When Wright preconized a method of treating diseases with bacterial vaccines and the method seemed to promise a new and successful enemy of disease-producing organisms, the practitioner was at first dismayed because it was thought that the treatment would require skillful bacteriological work and an unusual laboratory equipment. The new method found the great majority of practitioners without any particular training of this kind, and the first treatments were necessarily left to laboratory workers and clinicians in large hospitals, where facilities for the production of biologics were available. From the success of these enterprises, practitioners began to realize that it was their duty to give their patients the benefit of this new therapeutics. At the same time they realized their helplessness through lack of laboratory training and knowledge of bacteriology, appreciating that this treatment depended, first, on a correct diagnosis, not only of the particular disease at hand but also upon the knowledge and skill required to prepare the treatment—the bacterin. How to overcome the results of this failing became the problem of the day to all practitioners; it seemed that a new science was to be learned.

Manufacturer to the Rescue

Here the manufacturer came to the rescue by taking from the practitioner the work of preparing vaccines and producing stock preparations.

But this met only one requirement—the remedy. The next was to make the diagnosis. Here again, commercial acumen came to the rescue and produced products that would not only apply to a particular causative organism, but to two or three combined so that a good quality of guess work would answer in lieu of a correct diagnosis.

From the viewpoint of scientific therapeutics this would seem to be a return to the old shotgun nostrum. The justification is found in the fact that animal therapy must either be cheap or it must be denied to animal patients, and it need not be repeated that the bacteriological work required to make the correct diagnosis and manufacture a treatment therefrom is today and always will be entirely too costly a procedure for general veterinary practice. It is only in exceptional cases of valuable animals affected with chronic conditions that the autogenous vaccines can be utilized in the treatment of domesticated animals, and while it might be very desirable for the veterinarian to aspire to that state of ultra-refinement that characterizes therapy in the large medical hospitals where every need can be supplied without delay and with a certainty of correctness, it is nevertheless a truth absolutely incontrovertible that the veterinarian must forever be denied this splendid system as a routine therapeutic measure for his patients. The alternative is the stock vaccine—the shotgun vaccine if you will—produced with great care by manufacturers who are compelled to maintain high standards of reliability through commercial competition.

Producers Assume a Sacred Responsibility

Since the veterinary profession has accepted biologic therapy as a means to an end that

could not otherwise be attained those in whom confidence is placed have assumed a great responsibility and must therefore survive or perish in obedience to the immutable laws that annihilate fakers and their fakes from the realm.

Abuses Few

That there have been some abuses in this connection is conceded, but that these single and isolated incidents are soon detected to the discomfiture of the over-zealous exploiter is also well known.

The opponents of bacterin therapy among veterinarians are few and the exponents are legion, a fact that reflects great credit to the manufacturers of these products but which also indicates since there are opponents that the whole industry depends in a great measure upon cultivating the confidence of the practitioner by making the industry 100% pure, that is, making it entirely free from premature statements not proved by properly conducted experiments.

VETERINARIAN TO BE DIRECTOR OF THE ARMY VETERINARY CORPS

COL. C. F. MORSE, M. C.
Director of the Veterinary Corps

LT. COL. JOHN A. McKINNON, V. C.
Who Will Succeed Col. Morse

Colonel Morse leaves the veterinary corps immeasurably better organized than he found it. His skill in handling men and his genius for organization had been of incalculable benefit, and the present efficiency of the corps, as compared with the condition in which he took it in charge, will constitute an enduring monument to his ability as director and as an exponent of a better veterinary service. Colonel Morse was not welcome to the veterinary corps, particularly by veterinarians in civil life, solely because he was not himself a veterinarian, but his ability and his fairness, and more than all his achievements, obliterated every objection and raised him very high in the regards of all veterinarians, both in and out of the army. He leaves the directorship with the best wishes of every one who has its interests at heart, and especially of the war-time volunteers who learned for the first time the advantages of working under a command that is at once fair and masterful.

Lieutenant-Colonel John A. McKinnon has been transferred to Washington and assigned

to the army medical school, the understanding being that when Colonel C. F. Morse is relieved from duty as head of the veterinary corps and transferred from Washington, that Colonel McKinnon will succeed him, and the veterinary corps will, for the first time since its organization, have a veterinarian at its head.

Colonel McKinnon is not so well known in the veterinary profession as some of the other army veterinarians, largely for the reason that he has spent twenty years in the Philippine Islands. During the war he was chief veterinarian of the A. E. F. in Siberia. In 1919 he was detailed to Chicago and took the course in meat and food inspection at the army veterinary school there. His record is that of a highly efficient veterinary officer. He is a graduate of the Ontario Veterinary College and in 1911 took a post-graduate course at the University of Toronto.

DARWIN, SPENCER, HUXLEY, ET AL

It is quite l'ordre de jour to severely question the unproved theories promulgated by these old authors. The theory of evolution and especially that far-fetched one about the transformation of species are now quite commonly refuted by deep-thinking men and the best students of natural history.

It is more in order today in the light of our feebleness to teach that what is, always was, insofar as the minds of men can tell and that the theory of origin of species which Darwin tried to impose upon the scientific world is quite as great a mystery as life itself. It is becoming evident that the conclusions of these famous authors lack the kind of proofs the scientific men of today insist upon; that their conspectus was drawn from such narrow observations that it should be set aside as ill-founded and premature; and that it was but another dream about the problem of our origin which has not come true.

Surely, the outstanding fact that there has been no new species of animal develop in the memory of man nor any relaxation of the unknown biologic law that so stubbornly preserves their identity, seems sufficient grounds to challenge a theory that has always lacked even an iota of confirming evidence, after observations running back from these days of the modern laboratory and elaborate research expeditions into the remotest ages.

In short, no story has yet been written into the pages of modern natural history that is better than the one laid down in Genesis.

HELIOTHERAPY

Active influences in therapeutics are given more consideration than formerly. Little was known concerning light excepting for its relation to vision and the possible effects upon the skin until the advent of the roentgen rays. It has been demonstrated recently that sunlight is a potent influence in preventing or relieving the condition ordinarily known as rickets. Some few years ago, it was demonstrated that subacute or chronic tuberculosis in the human could in many instances be relieved by proper exposure of the tuberculous subject to the rays of the sun. More recently it has been demonstrated that some diseases of joints and bones in the human were noticeably benefited and some cases relieved by exposure to sunlight.

Young of Cambridge, has demonstrated the sensitiveness of albumins to the action of sunlight. When more definite information of the influence of light upon albumins is revealed, heliotherapy will be of value in the treatment of disease.—A. T. K.

THE SENSE OF DIRECTION

That there are special senses other than those we understand well, seem to be a fact no profound student of physiology will question, but these additions to the sensorium are so ill-defined that it has always been found convenient to dismiss them as instincts.

The homer instinct of the family cat shows with striking exactness that this creature has a special sense of direction second only to the homer pigeon.

A professor of Adelbert (Ohio) College in recent observations found that when a family cat is taken four to five miles from home they return by a direct bee-line route without a moment of hesitation but that they seldom return if carried more than 16 miles. Enclosing them in a box or sack through which they can not see does not embarrass this wonderful sense, and if they are chloroformed before departure or enroute their return is quite as certain although somewhat delayed. The chloroformed cat on being released will circle about for a time but finally finds its bearing and returns quite as promptly as if nothing had happened. The ability to accomplish this is due to a kinesthetic sense which is highly developed by such animals as cats and homer pigeons.

Dr. E. A. Schmoker Tells the Whole Story on One Page

Editors' Personal Page

The man who fights desperately for a hobby is usually a bore.

Learn to cull chickens, learn to caponize cockerels and learn to test milk and cream for butter fat before complaining that the field of veterinary science is diminishing.

If you have never felt the sensation of having critics to the right of you, critics to the left of you, critics to the rear and critics fore, you have never been the secretary of a veterinary association.

A professional journal that serves best is the one filled with the plans and actions of the most successful men in the field. It comes to its readers not as an authority in itself but brings to them the best authority obtainable.

"All pain is purely imaginary," says the Christian Science doctrine and yet in the face of this fundamental precept the press of this religion is waging a desperate war against vivisection.

Help your state university. Its influence is needed in every home. Help make it more and more democratic and remember it is your university.

Veterinary schools will be the foundation of our future just as they have been the foundation of our past. We should guard against all influences within and without the profession that would tend to destroy or weaken them.

Johne's disease is becoming rather widespread. New centers of this disease have recently been found in the central states. According to Beech and Hastings, it is possible to detect this disease by the use of Johnin, the reaction being a systemic disturbance, evidenced by rise in temperature. A careful study of this disease should be made by all practitioners.

How long shall we continue the improper use of the word "vaccination"?

Some men are intelligent but not intellectual; there is a difference.

If Congress had been called into special session for the expressed purpose of wrecking what is left of the army, it could hardly have done a better job. As destroyers of morale the legislative department of the national government easily wins the championship.

There is a difference between achievement and accomplishment. Skill in art is an accomplishment but is not an achievement until put into successful practice. Accomplishment may only be the knowledge of how to do things, while achievement is always the finished product.

There is nothing to fear about the future of such a cheap motor power as the horse until something cheaper is invented. Price is the all powerful force that will finally shape matters and nothing else.

GREAT MEN OF HISTORY

H. G. Wells has accomplished the monumental task of naming the six great men of history with such good judgment that no argument thus far advanced even threatens to dethrone them. They are Buddha, Asoka, Jesus of Nazareth, Aristotle, Roger Bacon and Abraham Lincoln.

Here is our choice of the six great veterinarians of history, any one or all of which we shall dethrone on better arguments than we can produce to retain them forever in the hall of fame: Vegetius, Bourgelat, Nocard, Dieckerhopf, Percival Robinson, J. G. Rutherford.

Our choice of the six great American veterinarians is: Stalker, Huidekoper, Law, Bell, Hoskins and (help us select the sixth).

Important News and Announcements

E. Delancy of the North Dakota Farm Bureau addressed the state veterinary association of that state on "The Horse Industry" July 18, in which he submitted statistics substantiating his claim that the horse is of greater importance to North Dakota agriculture than ever before.

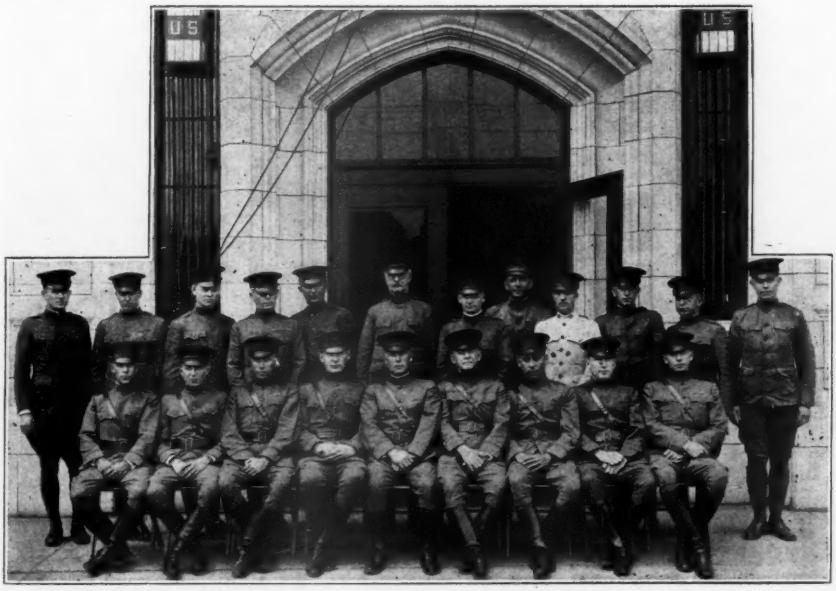
Tuberculosis in cattle can not be kept under control, much less eradicated, if grade animals and single cows owned by families are omitted in the clean-up of any territory. Whole areas therefore, like townships and counties, should be cleaned up rather than scattered herds, if the work is to be of permanent value and handled in the most economical way, says the United States department of agriculture.

"The repairs on two of our trucks cost $2,000 last year which would have kept 20 wagons up in good shape," says an official of the Consolidated Ice Company, of Pittsburgh.

Professor John W. Adams, of the Veterinary department of the University of Pennsylvania will be the official veterinarian of the horse show at the Delaware State Fair, September 4, 1922, at Elsmere.

Dr. G. A. Roberts, after two years of professional work in Brazil, South America, has returned to the United States, in company with Mrs. Roberts. They arrived in New York, July 24, and after a visit to their former home in the South, will attend the meeting of the A. V. M. A. at St. Louis.

THE RECENT GRADUATE CLASS OF THE ARMY VETERINARY SCHOOL AT CHICAGO, ILLINOIS



From left to right, seated: 1st Lt. James L. Barri ger, V.C.; 1st Lt. Howard N. Beeman, V.C.; 1st Lt. Robert P. Kunnecke, V.C.; Capt. Horace S. Eakins, V.C. (Instructor); Maj. Geo. A. Lytle, V.C. (Instructor in Charge); Capt. Jos. N. Hornbaker, V.C.; 1st Lt. Jos. H. Dornblaser, V.C.; 1st Lt. Samuel G. Kielsmeier, V.C.; 1st Lt. Raymond T. Seymour, V.C.

Standing: Staff Sgt. Frank Japcynski (Instructor); Sgt. Nicholas Rule; Staff Sgt. John R. Flahive; Sgt. Ephraim H. Edgar; Cpl. Martin F. Kelly; Tech. Sgt. Mac C. Brooks; Staff Sgt. Richard C. Hansen; Pvt. 1/c Frank Krokel; Pvt. Louis Carlsen; Pvt. 1/c Floyd I. Miller; Staff Sgt. John A. Shannon; Staff Sgt. A. R. Schaefer (Instructor).

Purely Practical

Informative Hints from Those Who Know and Do

Young pig vaccination is one of the pitfalls of swine practice.—Fitch.

"Too frequently post vaccination troubles are diagnosed as hog cholera merely because the autopsy reveals petechiation of various organs."—Cahill.

To give a powder to a horse load it into a balling gun and administer as if it were a ball. There will be none lost.—Faucett.

Much the best way to wash out a sore eye in the horse is to irrigate the conjunctival sac via the lachrymal duct. The stream flows evenly over the cornea and the winking distributes the solution everywhere.

Every time a hen goes broody put a band around one of her legs. This will very materially help in the culling process to select the non-profitable hens.

Serum treatment of dog distemper is as a rule helpful and will immunize exposed animals for a short period. It is good practice to thus immunize all dogs taken into a hospital for treatment no matter what may be the nature of their ailment.—Brumley.

The best medical treatment for canine distemper as described by Professor Brumley of the Ohio State university consists of iodin, 1/25 grain; creosote ¼ grain; dichromate of potassium 1/20 grain; made into tablets. The dose is from ¼ to 3 tablets, given every six to ten hours.

TO PREVENT RECURRENT COLICS IN HORSES

℞ Chlorazene ..... 6 grs.
Sodium bicarbonate ..... 4 drs.
Sodium sulphocarbolate ..... 1 dr.
M. et sig.

To be given after each meal for horses that suffer frequently from colics due to gastric indigestion.

Leg weakness in chicks can be prevented by the use of semi-solid buttermilk and cod-liver oil.

A strong hypochlorite solution is a valuable agent for the rinsing of milking machine teat cups and tubes.

Plow up the hog lot each year and raise some valuable pasture crop instead of allowing it to become worm and germ ridden.

Carbon tetrachlorid has solved one of the hardest problems of small animal practice.—Brumley.

HERD TREATMENT FOR NECROTIC ENTERITIS OF SWINE

The following treatment has given a reader of VETERINARY MEDICINE such good results that we are describing it herewith for the benefit of those interested in this serious, fatal affection:

1. Isolate the sick and destroy the hopeless cases.

2. Divide the others into two groups if possible:—the thrifty and the unthrifty. Weak and unthrifty hogs will do better when not harassed by vigorous ones. Put them all in clean, hygienic surroundings.

3. Give mineral oil (e. g. Polarine) at the rate of one ounce per pig in dry feed as a preparatory treatment.

4. Administer copper sulphate solution as follows: A 11% solution (1 lb. to the gallon of water) is given in slop at the rate of one ounce to every 300 pounds of live weight, twice a day for five days.

5. After five days administer the following powder: Copper sulphate, iron sulphate, and fenugreek, of each one pound; gentian, three pounds, hyposulphite of sodium, four pounds; soft coal 90 pounds. Grind into a powder in a feed grinder and administer in an open trough with a little chop feed spread over the top to induce them to begin eating it.

6. Follow by giving a small amount of this powder in the open trough each day.

7. Allow access to plenty of fresh water.

I. N. H.

General Practice

Edited by W. J. MARTIN, Medicine, and L. A. MERILLAT, Surgery

The Psychology of Collections

By J. B. Nourse, Kansas City, Missouri
Attorney Credit Men's Association of Kansas City

THERE are two outstanding organizations devoted to commercial work in this country. The one is the National Association of Credit Men, with a membership of 30,000 wholesale houses, and the Commercial Law League of America, with a membership of 10,000 attorneys.

The National Association of Credit Men as perfected is a wonderful organization in assisting the credit men in their work of passing upon credits and handling their collections and adjustments. It maintains offices through local organizations in most of our communities.

This organization maintains an interchange bureau which makes on interchange of credit information as secured from the ledger books of the establishments. It maintains an organization for the upbuilding of credit men and the building up of a co-operative spirit among credit men.

It maintains an organization in the nature of an adjustment bureau for the collection of accounts and the handling of adjustments and insolvent estates and an investigation and prosecution committee which investigates all complaints as made covering commercial fraud in any instance in which the committee is convinced that the fraud should be prosecuted. The prosecution is carried out under the direction of the association.

Foster High Ideals

This organization in the building up has been a powerful factor in assisting in the establishment of the federal reserve system. It has been a powerful factor in making our various state laws uniform. It has been a great service in placing such laws as the fictitious name law, the bulk sales law and the bad check law upon the statutes of a large number of states. The organization is a powerful influence in keeping the bankruptcy act on the statute books and maintaining a high standard in the administration of bankruptcy estates. The investigation and prosecution work of the association has gained world-wide prominence and has been complimented not only by commercial interests but by governmental departments.

The Commercial Law League of America, an organization of commercial lawyers, maintains an organization to create efficiency in the handling of collections and adjustments and to develop a better class of attorneys willing to handle such items. The organization has been an influence in co-operating with the association in the establishment of uniform state laws and in keeping the bankruptcy act upon the statutes and maintaining uniform rates for the handling of collections, for displacement of any attorneys who are found not to be reliable and in maintaining an interest in the law lists. By this term, we mean the lists as prepared of attorneys qualified and able and ready to handle collections. These law lists bond the attorneys and guarantee prompt and efficient and honest service from the attorneys so listed.

Collection a Profession

Collection is no longer a haphazard business. The credit man has now become a professional man and has been placed in such a position by his house that his work is one of the important factors. He must co-operate with the other departments, and while permitting the business to be upbuilt, he must at the same time keep the losses to the house at a very minimum percentage.

The Matter of Jurisdiction

In the handling of a collection, there are factors to be considered and these must become almost second nature. An example is the jurisdiction of our courts. In Missouri, we have the justice court with a jurisdiction up to $500 in the city and from $300 to $350 in the smaller communities. A justice of the peace can be found in every township. After the jurisdiction of the justice court has been reached, all matters then go to our circuit

court or district courts with unlimited jurisdiction. The justice court through the statute may secure service and have the case ready for trial within ten days. The circuit court or district court requires a much longer time. The person passing the credit may save many, many months by judging the jurisdiction of the courts and keeping the accounts within the jurisdiction.

Look Out for Mortgages and Exemptions

Another factor always to be considered is the chattel mortgage and conditional sales contract. A person may have considerable assets but the chattel mortgage or conditional sales contract may place them entirely out of reach of the individual extending credit without security. This holds true especially in the case of the farmer or the smaller dealer.

Another factor always to be considered is the exemption. Our law has always respected the necessity of an individual having some property so that he may not be a charge upon the state, and as a fundamental principle, every head of a family is given certain exemptions which in our state approximate a homestead of $1,500 in the country and $3,000 in the city and at least $300 of personal effects.

Credit an Essential

It is recognized in our business world that credit develops business and credit must be extended. Collections after the extension of credit become a necessary part.

In the handling of collections, a collection policy must be adopted. It is recognized that a certain time is granted for the payment of an account. After that date, the payment becomes in default and the policy of the individual or of the house must govern as to the action that is to be taken. Some houses and some individuals maintain that the pressing of a claim immediately after the same becomes due leads to a loss of friendship. Others maintain that prompt payments leads to a feeling of good will and really creates business, whereas business would be stopped if the account were outstanding.

Bring in Returns But Make No Enemies

The successful applications of a broad constructive policy in collection requires the same skill and forethought as the working out of sales, advertising, buying and credit policies. Bringing in the money without making enemies or losing business is the aim of every collection plant and its success depends upon the tactful persistence with which the policy of the house is carried out. A system which works with clock-like precision, massing the details of operating any collection office into groups for the purpose of standardizing operations will produce collection department results at a minimum of expense.

The individual handling his own collections should be the same on a smaller scale. The collection system is not something to be installed and successfully operated in all its details without change and adaption. Usually it is the result of gradual developments, changes and improvements introduced here and there as new and unexpected matters arise. If there is no carefully planned system for the handling of collections, one which is geared to the general policies and the growth of the concern using it, there is a resort to haphazard methods with the usual outcome of haphazard results.

The Attribute of a Successful Collector

It is impossible to outline any one collection system that may be fitted exactly to the needs of all business. The successful collector must have the same qualifications as a credit man. He must be of an investigative turn of mind, should have an agreeable yet indomitable ob-

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stinacy. An investigative turn of mind indicates caution, deliberation, vigilence and sagacity, while agreeableness, courtesy and respect are affirmative business building characteristics. These virtues when tempered with tenacity produce the positive qualificaions of a good collection man. In addition to his technical knowledge of collection psychology, the character, instinct, likes and dislikes, desires, ambitions, habits of thought and action peculiar to people who buy or secure service on credit, knowledge of law and of the market. One must study and train in all lines. Knowledge of merchandising often helps a collector in interesting a dealer in closing an overdue account; knowledge of how to find out the grievance or supposed grievance of a debtor and to bring that person to a good frame of mind; knowledge of how to figure costs and profits; a knowledge of how to answer the various excuses all help.

Some Fundamental Principles of Collecting

The various principles underlying collection effort are the securing of information of customers, the acqainting of one's self with the habits of living, buying, paying and thinking. Experience teaches the principle of habit, the importance of securing and holding the attention, the value of appeals to instinct and ambition and the value of suggestion. From the earliest times, human motives of thought and action have been substantially the same. Open discussions often arouse opposition when indirect suggestion will bring a response. Hence, a collection man having the general mental operations of a man's mind, will work with the trend of the person's thought rather than against it. Grouping of debtors is very valuable and a simple process of grouping debtors into classes according to the degree of promptness is most desirable, and after this classification, the business of applying persuasion or pressure begins. Frankness, without bluster, a swift and determined advance from step to step of collection procedure with occasional appeals to self-interest and pride, together with a steady pressure for payment, will do much to convince a delinquent that he has met his master and that further resistance will be too expensive to risk. It is no more difficult to use these appeals in correspondence than in interview. The collection correspondent must write much as he would talk, except that he will be much more brief. There is added value in the more distinct impression on the minds of a sales prospect when a series of sales letters are varied in form and appearance. Collection results are likewise effective by variation in type and appearance of the collection appeal. The basis of a successful system of collections is the constant reminder of the debt. A repeated suggestion that payment is due must be made. The second is to refuse payment. The object is to occasion in the debtor's mind a gradual remembrance of the debt and ultimately an absolute conviction of his duty in the matter.

Stages in Collections

Often the stages in collection procedure have been divided as: First, **Notification;** second, **Reminder;** third, **Reproach;** fourth, **Discussion;** fifth, **Resale** or **Suit.**

The second step, or reminder, is to the effect that the obligation may have been overlooked. The reminder must be always courteous and may follow various forms.

The third or reproach stage begins with letters to replace printed notices, appeals to pride and sense of obligation. Acceptances, drafts,

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Diseases of the Udder

By J. N. Frost, Ithaca, New York

MASTITIS

THE subject of mastitis is one that is of vital importance to the practitioner and consumer as well as to the cattle owner.

In the wild state, the udder supplied sufficient food only for the young but under domestication, the udder of the cow has been developed to furnish a food supply for the human being. Now that the value and reputation of the animal and its offspring is dependent upon its ability to produce milk, the udder is receiving more attention. Likewise, the attempts to force the animal in production is causing the development of an organ which is more readily affected by disease.

Chiefly a Cow Disease

Mastitis is more prevalent in the cow, not alone because of great forcing and consequent increase in the size of the udder, but also because of the extensive milk cistern and large teat orifice.

In discussing the subject of mastitis we have confined ourselves to the diseases of the cow's udder and have divided them into two classes —the medical and surgical diseases. We will consider first the medical.

The udder is a secreting gland made up of two principal parts, namely, the parenchyma or secreting part and the connective tissue or interstitial framework.

The parenchyma or secreting part is formed of many small canals, lined with a single layer of cuboidal epithelium. These canals unite to form larger canals also lined with epithelium and finally empty into the milk cistern which in turn may be emptied by suction or pressure through the teat canal.

The canals of the parenchyma are surrounded by the interstitial connective tissue which contains the nerves, blood vessels and lymph spaces.

The secretion of milk usually commences with the termination of the first pregnancy, or abortion, but occasionally one sees the virgin heifer giving milk. The active secretion is stimulated by the sucking of the young or by the massage of the milker.

Causes of Mastitis

The principal cause of mastitis is infection with the other causes that are usually given acting as predisposing factors. Cold floors, high protein feed and bagging up, which is done before sales or shows and which many claim will produce mastitis, may, by lowering the resistance of the udder, give the infection a better chance to develop. We have tried to develop mastitis by feeding cotton seed meal but so far have been unsuccessful.

The infection may enter in three ways. The principal way is up through the teat canal but it may also enter through an abrasion or wound of the skin or by metastasis through the lymph or blood stream.

The source of infection is most likely the discharge from a retained membrane, infected genital tract or a case of fouls. Dirty stable floors and filthy paddocks may be the source in some cases. Metastasis from a septic uterus is sometimes the source of the trouble and is especially liable to result in a purulent or gangrenous form of mastitis.

The use of milking tubes, quills and such material by the owner is almost sure to result in infection unless he has been thoroughly instructed in the care necessary in the use of these instruments.

Forms of Mastitis

Mastitis is divided by some authors into catarrhal, interstitial, parenchymatous, purulent and gangrenous forms. To these may be added tuberculosis, actinomycosis and necrobacillosis of the udder.

There are very few cases where a cow has a so called acute catarrhal or interstitial mastitis and recovers without the development of the parenchymatous inflammation. In other words the acute catarrhal and interstitial forms are generally the initial stages of the more serious inflammation of the parenchyma.

Symptomatology

Many consider mastitis as a disease of the fresh cow only. Of course it is more common at this time, when the udder is more highly congested and there is quite liable to be a retained placenta, or a metritis with the discharge running down over the udder.

Mastitis is a disease which may attack the calf soon after birth, before the udder has developed to any extent, or it may involve the udder of the dry cow.

The first changes in a mild mastitis are quite liable to be overlooked unless the first few

streams at each milking are drawn into a wire covered pail. This will detect any small clumps of coagulated milk or blood which would otherwise be overlooked.

The first symptoms in the more acute forms of mastitis are chills, staring coat, increased pulse, respiration and temperature, lameness due to pressure of the hind legs against the inflamed part, or to pyemic arthritis or tendo-vaginitis, edema, swelling, heat and pain in the udder.

The changes in the milk itself vary considerably with the individual cases. It may contain only coagulated clumps of casein, maybe thin and watery, of a yellowish color, or show redness due to hemorrhage. This red color, when present, is quite likely to denote streptococcic infection. One has to be careful to distinguish between the red discoloration due to streptococcic infection and that due to ruptured blood vessels and hemorrhage seen in the heavy milker or heifer soon after calving. In the discolored milk due to congestion and hemorrhage, the character of the milk is not changed.

The secretion of milk may cease entirely and an exudate of pus be present. This would be the purulent form of mastitis which is often caused by the owner using a dirty milking tube or quill and is also seen frequently in the dry cow and the young calf. In these cases we frequently have stenosis of the teat and the resulting abscess formation.

Purulent mastitis is sometimes accompanied by pneumonia in a cow which is being forced for a test or production. As a result we are liable to have prostration and death in a few hours due to toxemia caused by the resorption from the intestinal tract as well as the lung and udder.

In gangrenous mastitis the disease may run a very rapid course and the animal die in less than twenty-four hours after the onset of the disease. When the disease is confined to one quarter it may be more mild and the quarter slough off without the absorption and death. Gangrenous mastitis results from an infection with a virulent organism which involves the blood vessels and shuts off the circulation to that portion of the udder.

The udder becomes blue or dark in color, pits easily on pressure, is cold and clammy and not painful to pressure, while the secretion is dark, having considerable odor. The general symptoms are rapid, very weak pulse, with short jerky breathing and a subnormal temperature. Sometimes the animal is down, unable to rise and practically unconscious.

The symptoms of tuberculosis of the udder are not definite and a diagnosis can be made only by finding the bacteria in the milk. The udder becomes hard, firm and indurated and usually is not painful unless accompanied by other infections.

Actinomycosis of the udder is not common in this country. The symptoms consist of hard, firm swellings, smaller in size than in tuberculosis, with the abscesses more liable to rupture through the skin.

In necrobacillosis of the udder, the symptoms are those of an acute infection. The disease is more liable to appear in a stable where the disease has been present in the intestinal tract or feet of some animal.

Sequellae

As local sequellae of mastitis we may have stenosis of the teat or complete occlusion, chronic induration or thickening of the interstitial tissue with a resulting atrophy of the parenchyma, complete or partial atrophy of all the structures of the gland, and abscess formation.

As general sequellae we may have paralysis, encephalitis, bronchitis, pneumonia, toxemia, septicemia, pyemia, with abcess formation in the internal organs, or more commonly pyemic arthritis and tendo-vaginitis.

Prevention

One of the first things necessary in the prevention of mastitis is the education of the owner or herdsman as to the causes of the disease. At the same time get him to throw away the milking tube which he, probably, has hanging by a string on some nail in the stable ready for use.

At the time of parturition, the cow should be provided with a clean disinfected box stall or better still, be allowed to calve out doors. The hind parts should be kept washed with soap and water or a mild antiseptic to prevent discharges from running down the udder. Likewise, retained placenta if not removable should be cut off near the vulva. Grease and salves, as applications to the udder, should be avoided when possible as they tend to collect dirt and filth.

When the cow is in the milking stable she should be confined in a well bedded stall with some form of partition between her and the next cow to prevent injury to the teats and udder from the neighbor.

Clipping the udder lessens the chances of feces becoming lodged there while washing with soap, water and antiseptic, as practiced in certified dairies to lessen the bacteria count of the milk, may also lessen the cases of mastitis in the herd.

In milking the first two or three streams, which contain the greatest number of bacteria and of which the milk is usually discarded in a certified dairy, so as to lessen the bacteria count, should be milked into a pail or pan covered by a wire screen. This will detect an early or a mild form of mastitis that would otherwise be overlooked as any clots of fibrin, casein or blood will be caught in the wire. It also aids in detecting chronic cases which may be spreading the infection slowly to the whole stable. This allows one to begin an early treatment of the case, which to my mind is very important.

If there are any cases of mastitis in the stable, these cases should be milked last, leaving the diseased quarters until after milking the well in the individual cases. The milk from a diseased quarter should not be drawn on the floor but into a pail of antiseptic solution.

The time the infection is most likely to enter the teat is just after milking when the teat is relaxed. Usually the end of the teat is wet with milk at such a time and this small drop of milk serves as an excellent media for the development of bacteria and with the sphincter relaxed the infection may enter the teat.

Dipping the ends of the teats in antiseptic after milking cuts down the chance of infection from this source. Care should be taken, however, not to have the antiseptic too strong or it may cause sore teats and thereby increase the danger of infection. By using a shallow pan all four teats may be dipped at once so the process is not expensive either in time or in money.

Next, the litter under the hind feet should be scraped into the gutter before the cow is allowed to lie down, so that any milk which may have sprayed over the edge of the pail will not remain to increase contamination. Then sprinkling of the gutter with lime or ground limestone would not only lessen the danger from that source but would also increase the value of the manure.

The practice of allowing cows which have a more or less abundant discharge from an infected uterus to stand in the milking stable should be discontinued. Likewise the flushing of a cow which has a badly infected uterus should not be allowed.

In preventing infection of the virgin udder of young animals they should not be allowed to suck each other's udders as this is usually the source of the infection.

Bacterins Are Preventive

Bacterins play an important part in preventing infection of the udder. If the animal has been given a course of bacterin treatment, while dry or about the time the udder is beginning to enlarge, the chances of mastitis are greatly lessened. After using a bacterin we may give two or three injections of living culture. If possible, it is better to have a bacterin made from cases of mastitis occurring in the same herd.

Treatment

The advance in the knowledge of the treatment of mastitis has been exceedingly slow. While some of the crude methods of the older treatments have been discarded as useless, others are still retained as highly important.

In 1876, Dr. Law in "The Farmers' Veterinary Adviser" recommended the use of plenty of elbow grease or massage, frequent milking, and the suspension of the udder with a suspensory and an analgesic. These features are still considered highly important in the treatment of acute udder diseases.

The modern line of treatment calls for a physic, diuretic, hot or cold applications to the udder, suspensory bandage, frequent milking, antiseptics and bacterins.

In the choice of physics we may use the slower acting drugs, as **salts** or **aloin,** or the more active ones like **arecoline, eserine** or **pilocarpine.** The use of the latter saves some time and in severe cases may save life.

As a diuretic, **potassium nitrate** is generally used in two or three ounce doses and repeated daily. Some veterinarians depend entirely upon this drug in large doses to cure the disease, apparently with good results in mild cases that are not of long standing.

When it comes to the use of hot or cold applications to the udder, one may make his own choice as the results are about equal with either. There is a little more tendency to abscess formation with the use of hot applications. Personally, we prefer the cold applications but we are quite likely to be ruled by the weather; using the cold in warm weather and the warm applications in cold weather. This pleases the owner as he is liable to think the

application of cold water in zero weather a rather harsh treatment. In moderate weather I believe one is likely to find that cold applications are more faithfully applied than warm. On the ordinary farm the procuring of hot water is liable to interfere with the family wash and the cow goes untreated.

The application of heat can best be accomplished by the use of a suspensory bandage and packing the udder with cotton which can be soaked in hot water after the bandage is applied.

Antiphlogistine or agents of a similar character may be used to apply heat as may the electric lamp or the high power mechanism called the electric baker. The latter would not be practical for most practitioners.

The application of cold can be brought about by the use of the hose in those stables that have a water supply. Lacking this, the results may be obtained by the use of a piece of rubber sheeting, a rubber lap blanket, or an oilcloth in the form of a suspensory bandage which is filled with water to which cracked ice may be added if desired.

The suspensory bandage is important, not only for the aid it gives in keeping agents in contact with the udder, but because it aids in establishing a normal circulation and relieving the congestion of the udder. This is brought about by suspending the weight from the back bone and pelvis, thereby relieving the tension upon the blood vessels so that they will assume their normal course and position. We have been able with the use of the suspensory bandage to increase the milk supply of a normal test cow ten to twelve pounds a day.

These bandages may be made in a number of different ways. A simple way is to take an ordinary feed sack, placing it under the udder between the hind legs and then tieing or sewing a bandage to the diagonal corners across the pelvis.

Frequent milking is important as it helps to flush out the bacteria from the milk cistern and prevents the absorption of this toxic material.

Antiseptics may be used in three ways. First by elimination through the milk; second, by injection into the milk cistern; and third, by external application.

The use of antiseptics which are eliminated through the milk and thus disinfect the udder, is new compared to the other methods of treatment. It gives good results in acute cases but it not of very great value in old standing cases where the udder has become thickened with new formation of tissue.

There are a number of drugs that are eliminated through the milk but with many their germicidal action is not strong enough or they cannot be given in large enough doses to be eliminated sufficiently in the milk to do much good.

About the time methylene blue was so highly praised as a cure for absortion we began using it as an antiseptic in mastitis. In the milder forms of mastitis it was found to give good results but was not of sufficient strength for severe infections. (Allen.)

It is claimed by many that urotropin is eliminated through the milk as formaldehyde but this is not true. It is eliminated as urotropin which is not an antiseptic. There are two possible causes of this error; either the milk was allowed to become acid before it was tested for formaldehyde, or a test employing the use of an acid was used. In this way the urotropin in the milk would be broken down, formaldehyde would be formed and, of course, would give a positive test.

Formalin has given us the best results as an antiseptic which is eliminated through the milk. It may be given in one ounce doses twice daily and will be found in the milk two hours after giving it and will continue to be found in the milk for forty eight hours. It may be given in oil, milk or water but one should take the precaution that it is well mixed in order to avoid irritation to the throat. It may also be given in capsule but when so given we should be sure that there is a supply of water in the stomach or the solution may be sufficiently strong to cause irritation of the stomach wall.

Occasionally we find a cow in which the administration of formalin seems to cause a loss of appetite. This can generally be overcome by giving a tonic for a few days.

Another antiseptic, which is eliminated through the milk, is **acriflavine.** It may be given intravenously or intramuscularly. The dose, when given intravenously, is about 150 cc of a 1 to 1000 solution. Intramuscularly, it may be used 1 to 500 and dose decreased to 75 cc. It may be found in the milk one-half hour after injection and continue to be found for at least twenty-four hours.

Injection of antiseptics into the milk sinus is not highly satisfactory except in cases of catarrhal mastitis. Acute inflammation of the parenchyma causes a closure of the milk ducts and acini by the swelling and edema which is

produced. The exudates that are formed likewise help in blocking these ducts so that antiseptics that are injected into the teat canal do not reach the greater part of the diseased area.

External application of antiseptics is an old method of treating mastitis. It appears to be more particularly useful in treating old cases where the udder has become hard and firm. Most of the agents used are rubefacients as well as antiseptics and produce some results by increasing circulation and leucocytosis. Tincture of iodine, spirits of camphor, turpentine and oil or lard, and many other agents are used. An ointment which we use frequently is made as follows:

Vaseline, 2 pounds.
Spirits of Camphor, 2 ounces.
Spirits of Turpentine, 2 ounces.
Oil of peppermint, ½ ounce.
Carbolic acid, ½ ounce.

Bacterin Treatment Fails

We have already referred to the use of bacterins for the prevention of mastitis. In the treatment, we have failed to get results in the acute cases where there is a general systemic disturbance from the infection in the udder but this is what we should expect. When the disease has been of long standing and has become a purely local condition, we may expect results from the use of bacterins.

Milk a Vaccine

We generally begin the bacterin about the third day in mild cases and about the fifth day in more severe cases. Here also, as in the preventive treatment, we may follow the use of bacterins with vaccines. The milk drawn directly from the udder may be injected hypodermically as it is a vaccine, although of unknown strength. There is danger of abscess formation in a small percentage of cases with this method.

Following the Duncan idea, one may use the milk internally, either with or without combining it with an antiseptic.

In the treatment of purulent mastitis there is a call for surgical interference. When a quarter has become filled with pus, the quickest way to drain it is to amputate the teat. If the owner objects to having a three teated animal, a longitudinal incision may be made in the teat at its base. We then wash out the quarter with a normal salt solution or with peroxid to remove the pus and then inject a 1 to 1000 solution of acriflavine in glycerine.

Gangrenous and tuberculous mastitis, actinomycosis and necrobacillosis of the udder also call for surgical interference in the removal of half or all of the udder.

COW-POX

This is a common disease of dairy cattle but the organism causing it is unknown. The pustular stage is often overlooked by the herdsman and not much attention is paid to the disease until the pustules have ruptured and a dry scab formed. Several pustules which may have formed close together may rupture at one time forming a large sized scab.

Frequently mastitis develops as a result of cow-pox, either by metastasis or up the teat canal, with a cow-pox or secondary organism which may be present in this disease.

In preventing the spread of this disease the cow should be milked by a separate milker or else milked last. The hands of the milker should be washed before and after milking each animal and the stall of each thoroughly disinfected.

In treating the disease the scabs are removed and the pits treated with equal parts of tincture of iodine and glycerine.

There are a number of diseases similar to cow-pox which cause trouble with the udder. One of these which has been quite common in our locality is caused by a streptococcus and affects the skin of the udder but not the teats.

It spreads rapidly through the herd and while it produces mastitis in only a small per cent of cases, it does cause a very sore udder. It appears first as a moist area on the skin from one to two inches in diameter. Later the skin becomes dry and necrotic and sloughs with a core leaving a deep pit which heals slowly.

In treating we have had good results by swabbing the wound with tincture of iodine and using an autogenous bacterin on the whole herd.

DERMATITIS

When the udder of the cow is exposed to cold and moisture the skin frequently becomes inflamed and fissured. Wet milking, particularly in the winter, may produce the same condition.

Dermatitis is also produced in the fresh cow by the enlarged and inflamed udder rubbing against the thigh or coming in contact with a damp, cold floor. When the teats become fissured as a result of dermatitis, milking causes

bleeding and considerable pain to the cow so that she may be made a kicker.

Dermatitis usually responds to the use of antiseptics. However, it is better to use antiseptics which do not contain water. The antiseptic we have found most useful is equal parts of zinc oxide and glycerine, sometimes adding just enough tincture of iodine to cover.

NECROSIS OF THE SKIN

Necrosis of the skin of the udder is often produced by the bacillus necrophorus and usually affects the skin between the two halves of the udder forming more or less of a thick, hard scab. An odor like that in foot rot is also produced. This disease responds very readily to washing with 1 to 2 per cent formalin in water.

HEMATOMES OF THE UDDER

Hematomes of the udder are most often produced by the animal being bunted by a stable mate. It does not ordinarily affect the gland or the milk secretion but results in a blood clot forming under the skin. This in turn may become infected by metastasis, resulting in abscess formation.

The treatment is the same as for hematome on any other part of the body. Generally it is better to open freely and pack, following with antiseptic treatment.

WOUNDS OF THE UDDER

The wounds of the udder may be superficial, involving only the skin, or they may be deep, involving the glandular tissue. They may be self-inflicted by sharp duclaws or they may be caused by other animals stepping on the udder as the cow is lying down. In the cow at pasture they may be caused by barb wires, thorns or sharp pieces of wood.

In the treatment, if the gland is not involved, the loose pieces of skin may be cut away and the injury treated as an open wound. If the gland is involved it is better to suture as carefully as possible in order to prevent the flow of milk through the wound. After suturing, the edges of the wound may be more firmly held in position by strips of adhesive tape. The latter may be used also to hold an antiseptic pack on the wound.

WOUNDS OF THE TEATS

Wounds of the teats may be produced by thorns, barb wires, dog bites, etc., while the animal is at pasture, or by being stepped on in the stable These wounds may be simple, involving only the skin, or they may involve the milk duct or the external opening. The process of milking hinders the healing of teat wounds and also causes pain, so that in many cases the animal becomes difficult to milk and the owner resorts to the use of a milking tube. When loose pieces of the skin are present without the teat canal or the end of the teat being involved, they may be cut away and the wound treated with antiseptic wash or powder. If the duct is involved it is better to suture as soon as possible, first producing local anesthesia so that the suturing may be done carefully. A row of catgut sutures may be placed in the lining membrane with a row of silk sutures through the skin and subcutaneous tissue.

An injection of quinine and urea, 4 per cent solution in normal salt, into the tissues surrounding the wound will produce anesthesia for four or five days and the owner will not be so likely to use a milking tube and infect the whole quarter. As a dressing we may use strips of adhesive tape to hold a pack over the part.

A dressing we like better is made by soaking a small strip of gauze or cotton in collodion in which has been dissolved a few grains of iodine crystals.

After allowing the gauze to dry for about a minute it is wrapped around the teat and makes a fine, clean dressing that will stay in place even while the animal is being milked.

By the time sensation is re-established in the teat the wound should be healed sufficiently so that the milking tube is not necessary.

Wounds at End of Teats Often Serious

When the wound involves the end of the teat, especially the external opening, it becomes very difficult to withdraw the milk as a scab generally forms and the owner invariably uses a tube.

Intubation Carries Infection

In doing this he generally carries some infection up into the milk canal and an infected quarter results. Sometimes the scab may be removed, the end of the teat softened and the milk started by soaking in a cup of warm antiseptic, preferably a carbolic acid solution as that produces a slight local anesthesia. It is often difficult to get the owner to spend the time to soak off the scab. He prefers to use a tube and that generally means the loss of that quarter.

Prevent Closing by Wadding the Meatus

If the swelling is so great that the milk cannot be removed without the use of the tube,

after draining the quarter we use a plug in the end of the teat to prevent the orifice from closing. A great deal of care must be taken in using the plug or it will cause just as bad results as the tube. For disinfection of the tube or plug we like the use of spirits of camphor. One may leave the owner an ounce vial of camphor and by tying a fine silk thread to the plug it may be dropped into the bottle and corked. This method will leave the plug to be reinserted as nearly sterile as by any means we have been able to devise.

When the plug is taken from the solution the alcohol evaporates, leaving a fine coating of camphor over the surface which is more likely to keep it sterile until inserted.

Thoroughly Disinfect the End

The end of the teat should be thoroughly disinfected, the scab removed and the opening soaked in spirits of camphor. Then before inserting the tube or plug a small amount of Iodex or other antiseptic salve is placed over the end of the teat and the plug pushed through this. Then the whole end of the teat is enclosed in a cotton pack soaked in the collodion solution in order to keep out further infection. At the same time it is well to put the animal on formalin internally to keep down the infection in the udder and teat as much as possible.

This becomes quite a long task for the owner to follow twice a day until the wound is healed, but he is usually willing to spend some time rather than to have a three-teated cow, especially if you can offer a fair percentage of recoveries.

In place of the plug a clove or a burned match may be used but the plug carefully used has always given us better results and there is no danger of its being drawn up into the teat as sometimes happens with the clove or match.

TEAT FISTULA

Teat fistulas are of two kinds: the congenital and the acquired. Most of the congenital fistulas are in the hind teats and instead of being true teat fistulas they lead to an extra section of the udder. Very often the external opening is marked by a small rudimentary teat.

The acquired fistula is generally the result of a wound which injures the milk duct while the animal is in milk and the presence of the milk secretion prevents the tract from healing.

The treatment of milk fistula is best undertaken while the animal is dry. Where the congenital tract is marked by a rudimentary teat, the removal of the teat with a pair of shears may be all that is necessary to heal the opening of the fistula. It is safer, however, to cauterize the tract for an inch or two from the opening with a hot wire so that the pressure of the fluid secreted in the gland when it becomes active may not break down the newly-formed adhesions.

In the treatment of the acquired fistula, it may be cauterized the same as the congenital or it may be opened and the lining membrane dissected out and the wound sutured.

ATRESIA OF THE TEAT

Atresia of the teat is a congenital condition in which the opening fails to appear, so it would occur only in the heifer with first calf. The obstruction is simply a thin layer of skin that may be easily punctured. By forcing the milk down in the teat the point where the opening should be is plainly seen. It may be punctured with a hypodermic needle, a trocar, or it may be cut with a knife. The herdsman should be instructed to milk out every half hour to keep the opening from closing, or a plug may be inserted for the first twenty-four hours.

STENOSIS OF THE END OF THE TEAT

Stenosis of the end of the teat may result from injury or from local infection. The latter is most often the cause. The "bagging up" which is used during a show or before a sale is a predisposing cause as it produces considerable congestion of the part. The milker notices first the end of the teat swollen, sensitive, and a red scab forming. He usually thinks it is the result of being stepped on, but such is not the case.

Condition Infections

It is a mild form of infection which may spread rapidly to a number of cows in the same dairy involving one or more teats of each. It is quite rapidly spread by the milking machine. The milk is withdrawn with difficulty and the milker may want to use the milking tube. In so doing he may spread infection to the whole quarter.

Formalin Indicated

In treating we give large doses of formalin to prevent the infection from spreading up the teat to the udder. The milk may be withdrawn by first softening the scab by soaking it in a cup of hot antiseptic or, if necessary, the tube may be used under antiseptic precautions. If

this does not keep the opening from closing a plug may be used with the same precautions and dressing as described under wounds of the teat. Taken early the stenosis may be relieved by burning lightly with a caustic. This will overcome the local infection and makes the milking less difficult. As a caustic for this purpose we use the chromic aluminum applicator (chromic acid 50 per cent) which is just about the right size for the end of the teat and gives us good results.

Surgery Sometimes Required

If the stenosis in the end of the teat becomes permanent, resulting in a hard milker, it is necessary to enlarge the opening. This may be done by means of a dilator or a sound to stretch the external orifice but a more sure way is to enlarge the opening with some cutting instrument. A teat bistuory with a knife in the side may do but we prefer the Kny teat tumor extractor which cuts out a circular piece. The end of the teat should be thoroughly cleaned and disinfected before operating and the instruments sterilzed.

It is well to give the animal an antiseptic that will be eliminated through the milk. Care should be taken not to cut too large an opening or the teat is liable to milk too easily and become a leaker. If it is cut until the milk will flow in drops on the end of the teat it is usually enough and the contraction which takes place in healing will be sufficient to prevent the teat from becoming leaky.

Operate When Quarter Is Full

To keep the opening from becoming closed from blood clots and scabs we like to operate while the quarter is full of milk. Then have the herdsman milk out a stream or two every twenty minutes or half an hour. A sterile piece of large-size silk thread may be inserted for the herdsman to remove at the next milking and in this way be sure that blood clots or scabs do not close the opening.

SPIDER TEAT

The so-called spider in the teat is a form of stenosis near the base of the teat. It is a productive inflammation of the lining of the canal resulting in a mass of fibrous connective tissue forming. It is usually caused by a mild infection of the teat canal with or without injury. Sometimes it develops while the animal is dry, especially if the animal is dried off too rapidly while there is a little infection in the udder.

Iodine Sometimes Helpful

When it is first forming it results in slow milking but as the growth becomes larger it may cause a complete obliteration of the duct at that point. In the early stages the growth may be checked and even decreased in size by painting a ring around the teat at that point with tincture of iodine.

In the surgical removal of the spider it may be done in two ways, either through the teat canal or through an incision in the skin. If the canal is not completely closed, we prefer to remove it through the teat canal by means of the teat tumor extractor. By forcing the cutting edge above the tumor and cutting down upon the closed shaft, at the same time holding the tumor between the thumb and fingers, it can be removed without injuring the rest of the teat canal.

If there is complete obliteration so that the teat tumor extractor cannot be forced above the tumor, then an incision may be made through the skin down upon the tumor and the latter dissected out, after which the incision is sutured as described under wounds of the teat.

OBLITERATION OF TEAT CANAL

Obliteration or closure of the teat canal may be brought about as described above under spider or it may be due to the formation of a thin membrane between the milk cistern and the teat canal. This membrane develops before the first freshening period or during the time while the animal is dry. It may be thin and easily broken down or it may be so dense and firm that it cannot be ruptured.

In correcting this condition it may be possible to force a sound or a trocar through the membrane and then use a teat bistuory to enlarge the opening sufficiently to let the milk through.

Another form of obliteration of the teat canal is seen where the whole canal is closed from the external opening to the milk cistern. This is brought about in the old cow by infection while being dried off, but it is more often seen in the heifer with the first calf. In these heifers it has its start in the calf when the quarter becomes infected and pus forms as a result of the young animals sucking each other after being fed milk. This is one reason for advising individual stalls for calves or else confining them in stanchions for a short

time after each feeding of milk.

In the heifer the teat canal should not be distinguished from the rest of the teat but in a case of obliteration the canal feels like a hard, firm tube when the teat is rolled between the thumb and fingers.

Treatment is of no value in these cases and the quarters involved are allowed to dry up. Cold showers may relieve congestion in the gland but secretions cease as soon as the milk cistern becomes filled.

LEAKY TEATS

In these cases the milk flows from the teat whenever the udder becomes distended. The condition may be corrected by using an intradermal needle and injecting a few drops of Lugol in several points close to the orifice. This may need to be repeated two or three times.

Another method which helps if the sphincter is not too widely dilated, is to soak the teat in 5 per cent tannic acid in glycerin. When the teat is small, we use a rubber finger cot partially filled with the solution and placed over the teat. Cotton soaked in the solution may be bandaged on in other cases.

AMPUTATION OF THE TEAT

Amputation of the rudimentary teat is performed in the young animal in order to make the udder more symmetrical. It is a simple operation requiring only the removal with sharp scissors, washing with a mild antiseptic and painting over with tincture of iodine. Care should be taken, however, not to get too deep and injure the glandular tissue.

Indicated as a Drainage Expedient

Amputation of the teat is also performed in those cases where there is abscess formation in the cistern or the glandular tissue and the pus cannot be forced out through the swollen teat. General septicemia is likely to result if the pus is not drained out from that quarter and the best drainage can be obtained by amputating the teat up near the udder where the opening is large. That quarter can be of no further value so it can do no harm to remove the teat.

Mattress Suture Enlarges Opening and Arrests Hemorrhage

The hemorrhage may be controlled by passing sutures through the skin and connective tissue as well as the lining membrane and back through to the skin. This makes a mattress suture and serves to enlarge the opening into the milk cistern. As many of these sutures may be used as necessary to control the hemorrhage from the vessels. The pus may then be washed out through the opening which is at the bottom of the abscess.

ABSCESSES BETWEEN GLANDULAR TISSUE

There is a condition which may be mistaken for abscess of the udder but which does not involve the glandular tissue. An abscess may form in the supermammary lymph gland or between the two halves of the udder and produce considerable swelling but the flow of milk is not decreased and the character of the milk is not changed. These abscesses may be opened on the posterior side of the udder or they sometimes point down between the two halves of the udder and may be opened there. After opening, care should be taken that pus is not discharged over the ends of the teats and the infection pass up the teat canal. It is well to disinfect the teats frequently to prevent this infection of the quarters

GANGRENOUS MASTITIS

Gangrenous mastitis differs from the other forms in that the part becomes cold, pits upon pressure, is dark bluish in color, and the secretion of milk ceases. In its place there is a watery, flaky exudate. It is very common in the ewe and is often associated with stomatitis in the young lamb. Whether the mastitis is the cause of the stomatitis or the stomatitis the cause of the mastitis has not been definitely decided.

Gangrenous mastitis is quite likely to produce septicemia and early death of the animal. If only one quarter is involved the skin over the part may become necrotic, the glandular tissue slough out and the animal make a recovery.

About the only treatment for gangrenous mastitis is the removal of half or the whole of the udder. This may be done under local anesthesia by injections along the median line and then injecting about two inches laterally from the teats. If one prefers, general anesthesia of chloral or chloroform may be used.

The principal blood vessels of the udder are the external pudic arteries and veins which come down through the so-called inguinal canal, and the milk vein which passes anteriorly along the belly.

An incision is made first on the median line,

(Now turn to page 568)

Cattle Practice

Edited by JOHN FRANCIS DE VINE, D. V. S.
Professor of Bovine Medicine, New York State Veterinary College at New York University, New York City.

Treatment of Pneumonia and Metritis in the Bovine

EVERY country practitioner is acquainted with the fact that in the past the treatment of pneumonia in cattle has been anything but satisfactory; the milder cases responding but the more severe cases usually terminating fatally. After having repeatedly experienced during the past twenty-five years outbreaks of pneumonia in cattle which I was absolutely helpless in checking and in which treatment seemed of little avail, I feel that I am in a position to know how any information that anyone may give to the country practitioner that will aid him in successfully combating this disease, will be received. Again, practitioners know only too well that what has been true of pneumonia in cattle has been equally true with severe cases of metritis and metroperitonitis in the bovine. Hence, this article is addressed to the rural practitioner.

Stock Yards Pneumonia

In treating pneumonia in cattle no matter what our medication may be we never think of treating a case without using hemorrhagic septicemia bacterin or the mixed infection bacterin, which contain also the septicemia organisms. The reason for this is that from clinical experience, I am of the opinion that most severe cases of pneumonia are dependent largely upon the group of organisms that produce hemorrhagic septicemia, or the so-called stock yard pneumonia. We repeatedly see how readily fatal pneumonia may be produced in cattle by exposure or shipping and how in such cases these organisms predominate. As to the ultrascientific aspects of this argument, I have no concern. My concern has always been to save the stockman's cattle, being quite willing to resort to anything that would do it. It is common knowledge that clinical results often precede scientific explanation and where it does it is good enough for me. In treating all pneumonias in addition to our stimulation, it is our custom to give an injection of bacterin night and morning for the first two or three days and then an injection daily for the next few days. But if the animal is not responding, we do not hesitate to double the dose on the third or fourth day. Let the theory of bacterin be what it may as to their being useful only in chronic conditions and at set intervals. We are thoroughly satisfied from clinical experience that bacterin is positively useful in acute infections and that they should be used more as we would use a drug rather than at arbitrary intervals.

Metritis

In cases of metritis that are nearly always occasioned by retained placenta, there are but two problems involved. First treating the uterus; second, sustaining the physical condition of the animal For the latter we rely upon mixed metritis bacterin, given as we give bacterin in pneumonia and a preparation that has served us well, containing hyposulphite of soda, ginger, nux vomica and fenugreek.

As to the handling of the uterus, there are two things to keep in mind. One is to cleanse the uterus without doing it injury and the other is to keep down putrefaction. In cleansing the uterus, I personally prefer, when I can, a thorough irrigation and syphoning out until it is literally cleansed, using either a normal salt solution or a bicarbonate of soda solution, beginning about twenty-four hours after abortion or parturition has taken place and continuing daily where it is practicable until the uterus is free of all material, so far as possible, that may invite putrefaction or until it has involuted so that it is impossible to pass the hand through the cervix, when vaginal douching, uterine capsules and gentle massaging where practicable, every day or two, is resorted to if necessary. However, the necessity of prolonged treatment is very rare when the case has had proper attention from the onset. After each douching something should be placed in the uterus and spread about over

the membranes, if they are still intact, to lessen decomposition or the work of the secondary invaders until the uterus can be douched again. A mixture that is light and satisfactory may be made of boric acid, iodoform and thymol. This may be put in a capsule, the lid of the capsule removed and after it has been carried into the uterus, its contents spread around where desired. Where a uterus has been neglected and putrefaction is rampant, under no conditions should anyone attempt to douch such a uterus.

To those who are interested in the details of douching the uterus or when one should be douched or not douched, I would be glad to mail them a reprint of an article that covers that question rather thoroughly, but as it has already appeared in the April, 1918, number of this Journal, I think it too lengthy to repeat.

ETHER TREATMENT FOR MASTITIS

"I have used ether treatment (for mastitis) in quite a number of cases and find in this experience that in cases that have a high fever the results are good, while those with a low temperature do not respond as well. I use one to four ounces and generally three, four or five treatments."—Plank, Report Id. S. V. M. A., 1922.

"I have had quite an experience with the ether treatment and find it very successful. I have used straight ether injected right into the teats without any bad results at all, and have used as high as two ounces."—Nelson, Ibid.

"I have tried the ether treatment in two different cases. For the equipment I used the regular milk-fever outfit. In the first case I had the water too hot and the ether went right up into the gland and burned the tissues badly. In the next case I started with warm water until the ether began to vaporize and then gradually increased the heat until the ether began to boil, and thus got good results. At first the udder was sore but after the ether vapors began to take effect it could be handled roughly without causing any pain.—White, Ibid.

SURGERY JUSTIFIED IN RIGID CERVIX

There is no particular danger in operating if instruments and hands are reasonably clean and great care is taken not to cut so far forward as to open into the peritoneal cavity. In other words, there is not much danger in severing the two outer rings of the cervix. Usually when these are severed it is an easy matter to effect dilation. But if the cervical canal must be severed the entire length, it is well to have one hand in the rectum to guard the knife. It is our custom to always carry a hooked knife, similar to the small castrating knife. It is the only knife we use in obstetrical work. This knife is particularly handy because it can be placed where we wish to make our incision begin and draw it back. We always make the incision through the superior wall of the cervix, about in the center, to assure drainage. If the one incision is not sufficient others are made on each side of the first one, taking care that they too are sufficiently superior to drain. After the fetus has been delivered it is well to swab the wounds with some mild antiseptic and, if it is not convenient to see the case again, vaginal douching with sufficient force to irrigate the cervix daily for a time is advisable.

If inertia of the uterus is retarding dilation as is frequently seen in abortion infected uteruses, drugs, forcible dilation and a lot of good judgment are indicated. As to internal medication up to the present, drugs have given us no definite results.

TUBERCULOSIS WORK TOO COSTLY

"Without any reflections on anyone and without going into the financial details I will simply say that tuberculosis eradication work is costing too much money for the amount of testing done. The cost of testing per cow is, in some states at least, ridiculously high. This work must be speeded up or many of our cows will be dead of old age before we get them tested and the cost of testing must be reduced or the project will almost bankrupt the government and all of the states before it can be completed." D. F. Lucky, Mo. Val. Vet. Assn.

DOSE OF QUININE AND UREA FOR TICK FEVER

Since publishing an article on a system of medication for tick fever, I have received many inquiries, many of whom failed to enclose self addressed stamped envelopes, with reference to the dosage and method of administration of quinine and urea hydrochlorid.

I usually give from 25 to 50 grains of quinin and urea hydrochlorid dissolved in one ounce of water subcutaneously, making three or four injections with this solution. I next dissolve one grain strychnin in two or four 3 of water and inject it subcutaneously. Do not use arecolin or eserin.

Cases that are down on the ground and

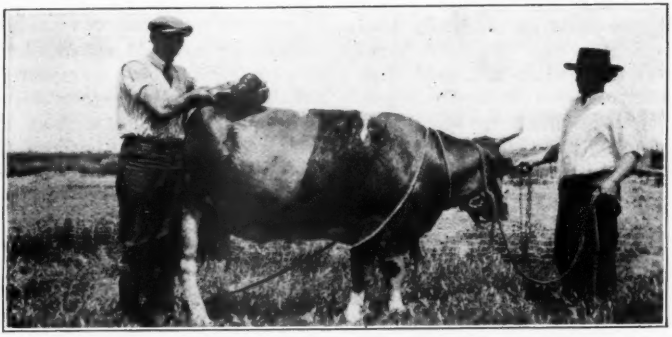
showing pronounced hematuria can be made to rise and recover.

Waynesboro, Miss. G. E. ELLIS.

CESAREAN SECTION IN A COW SUCCESSFULLY PERFORMED

I was called to examine a pure-bred Guernsey cow for pregnancy one month over-due She had not had an estral period since bred, ten months before and was not "springing."

The vaginal examination revealed a ceiled cervix. On rectal exploration I located a corpus luteum in the right ovary and a gravid horn with an ill-defined mass lying low. I made a provisional diagnosis of mummified fetus, but thought also it might be a tumor.



A month later when the condition had not changed I pronounced the case one of mummified fetus.

On four or five different occasions I attempted to press out the corpus luteum but failing to abort her in this way I decided to await results in hope that nature would come to the rescue.

Finally, however, I decided to perform cesarean section. The operation was done May 15, 1922.

Technic

The right flank was clipped and disinfected cocaine injected subcutaneously and the cow cast in a pasture lot. An incision was made through the abdominal wall but I experienced some difficulty in bringing the fetus through, and when this was accomplished the uterus was incised and the fetus delivered. It was well developed, covered with hair and weighed 14½ pounds.

The placental fluids were all absorbed and the fetus dried up. The recovery was uneventful and the cow came in heat 21 days later. She showed no evidence of ill-health either before or after the operation.

Manteca, California. A. J. Whitaker.

DON'T

Don't put milk on window ledge to save ice.

Don't place milk in open, unclean vessels exposed to air and flies.

Don't use milk over twenty-four hours old for the baby.

Don't mix old and new milk.

Don't have janitor take in milk, unless he puts it into an icebox.

Don't fail to wash bottles with scalding water.

Don't fail to return empty bottles promptly.

Don't economize on ice. Ice is cheaper than milk.

Don't fail to keep milk cold.

Don't forget that good milk is good food.

There were almost one hundred billion pounds of milk produced in the United States in 1921.

The Department of Agriculture estimates from the reports of 6,500 farms that the calf births increased about 9 per cent in the first quarter of 1922 compared with the same period for 1921.

Ayers and Mudge have shown that streptococci are frequently found in the udders of normal cows and that the same species of streptococci are also present in cases of mastitis. They further state that there is no reason to believe that streptococcus mastiditis is pathogenic for man when consumed in milk.

IMPETUS GIVEN TO FIGHT ON CATTLE TUBERCULOSIS

As the possibility of eradicating tuberculosis in cattle becomes apparent to a greater number of people, the campaign against the great live stock plague gains impetus. States and counties that had given little thought to this work from the economic standpoint are now taking it up in a businesslike manner, says the United States department of agriculture, because they can see the possibility of ending for all time this drain upon their live stock resources.

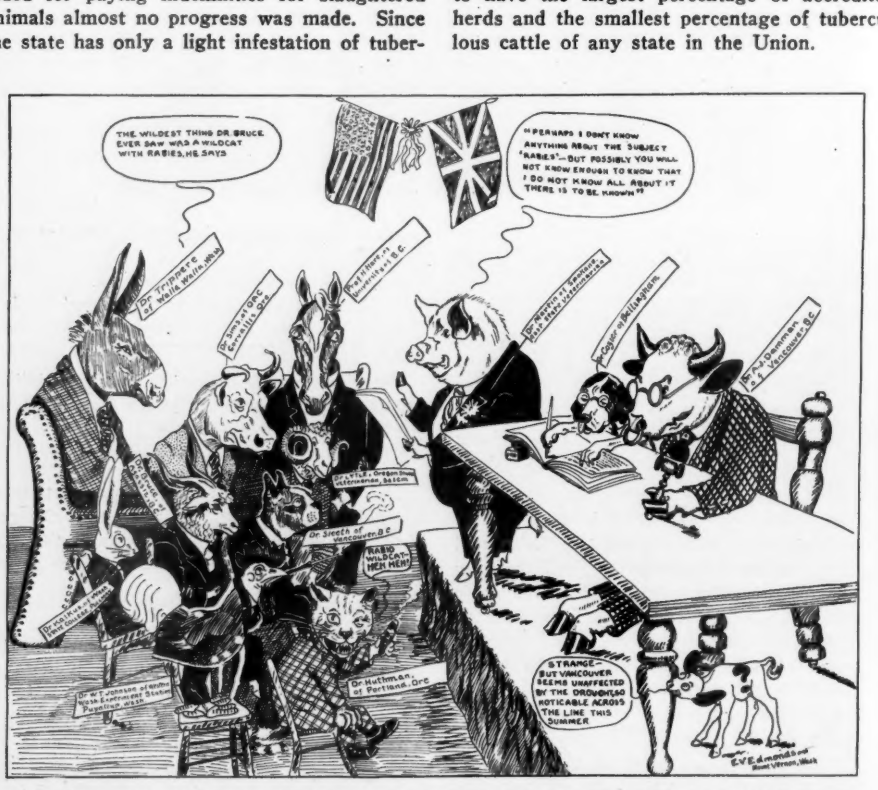
The latest state to fall into line for practical tuberculosis eradication work is Louisiana. On June 29 the legislature passed a bill authorizing the state live stock sanitary board to cooperate with the United States department of agriculture, and providing an indemnity fund of $15,000 a year for two years. A small amount of eradication work had been done there before, but because no money was provided for paying indemnities for slaughtered animals almost no progress was made. Since the state has only a light infestation of tuberculosis, estimated by the bureau of animal industry at 1 per cent, it should require only a few years of such appropriations to free the cattle entirely.

Massachusetts, a state that has been spending money to fight tuberculosis of cattle since 1894, recently passed a law enabling the state bureau of animal industry to cooperate with the United States department of agriculture. About $60,000 a year will be provided to pay indemnities on the cooperative basis with the federal government.

—U. S. Clip Sheet.

The shortage of funds for accredited herd work is to be met in Ohio by urging farmers to waive compensation for animals slaughtered until the next session of the legislature.

There are now 675 accredited herds in Virginia according to a report from State Veterinarian Ferneyhough. This state is said to have the largest percentage of accredited herds and the smallest percentage of tuberculous cattle of any state in the Union.


THE WILDEST THING DR. BRUCE EVER SAW WAS A WILDCAT WITH RABIES, HE SAYS
"PERHAPS I DON'T KNOW ANYTHING ABOUT THE SUBJECT 'RABIES'—BUT POSSIBLY YOU WILL NOT KNOW ENOUGH TO KNOW THAT I DO NOT KNOW ALL ABOUT IT THERE IS TO BE KNOWN"
RABID WILDCAT HER MEN
STRANGE—BUT VANCOUVER SEEMS UNAFFECTED BY THE GROUNDLOG NOTICABLE ACROSS THE LINE THIS SUMMER
E.V.E. Edmonds

A Message from the Oregon, Washington and British Columbia Veterinary Medical Associations

Swine Practice

Edited by A. T. KINSLEY, M. S., D. V. S.

Insanitary Conditions and Losses of Hogs

The losses of swine due to parasitic invasion and other diseased conditions resulting from microbian infections of various kinds due to insanitary conditions, are enormous.

Recently some eighty head of hogs were carefully examined on a farm in central Missouri in which there had been about thirty deaths of spring pigs. The older hogs on this premise had been simultaneously immunized with serum and virus and were probably immune to hog cholera.

The first symptoms evidenced in the pigs consisted of thumping and more or less discharge from the nostrils. Later there was weakness, emaciation and diarrhea. The attending veterinarian conducted some autopsies which revealed some hemorrhages in various tissues and the possibility of a low grade filterable virus was suspected. As a result of the autopsy findings, the spring pigs were given the serum and virus treatment but the deaths continued.

The accompanying illustration evidences the primary source of the trouble. These hogs were probably affected to a slight degree with the filterable virus but the principal disturbing factor was the round worm and particularly the larval form, which had invaded the lung and produced marked disturbances.

The accompanying illustration shows a waller adjacent to the barn. This mud hole contained about one foot of semi-solid mud including the drainage from the barn yard and it will be noted that the hogs are making use of it and it is very probable that this was the principal source of the parasitic infestation on the pigs on this farm.

Note the accumulated trash in the lot and the appearance of a pig affected with ascariasis. This pig survived the primary invasion of the lung with larval ascarids and is now showing the combined effects of the larval ascarids in the lung and adult ascarids in the intestine. Note the general attitude and

A street urchin on taking his first look into a hog lot declared "Well the fellow dat named 'em hogs named 'em right" and when told the pork was made from the things he saw wallowing around in the filth added "Never again for me; Izzy is not such a chump as I thought."

When the veterinarian preaches cleanliness to the hog breeder, although it may not just now be fully appreciated, he is doing a service that will not only check disease but will also prevent the word "pork" from becoming as impolite in table conversation as the word "hog" itself. All of which inspires the thought that it might be well to begin to look askance toward the esthetic possibilities of hog production.

appearance. This pig is not more than two-thirds the size that it should be and it is emaciated and weak.

Ascariasis is responsible for extensive losses of swine each year. The swine losses due to these parasites can be prevented by eliminating the adult ascarids from the intestine of sows and freeing their skins of ova and embryo prior to placing them on clean quarters for farrowing and by keeping pigs in lots or pastures that have not been occupied by swine for at least one year. The hog lots and feeding pens should be cleaned frequently, all refuse and trash being properly disposed of. A valuable service can be rendered by veterinarians by disseminating knowledge relative to the life history of the ascarids to the swine producer.

HOG CHOLERA PREVALENT

According to reports, hog cholera outbreaks are rather numerous and quite widespread throughout the central states. More swine were immunized during the first seven months of 1922, according to the reports of practicing veterinarians, than for a like period of any preceding year. The losses of swine from hog cholera infection have not been unusually large this year, particularly if the number of cutbreaks is taken into consideration. The small losses for the present season must be attributed to the prompt action of the state sanitary authorities and the practicing veterinarians. If the immunization of swine is continued at its present rate, there will be a serious serum shortage before the season is over.

Immunization Widely Practiced

There are probably two reasons why immunization of swine has been practiced on such a large scale this year. First, the price of swine is high in comparison to the price of corn and with the present rates for the price of swine and price of corn, swine feeding is going to be profitable. A second reason why so many swine have been immunized is probably due to the large number of outbreaks of hog cholera which has been a stimulus for the swine producer to insure his swine against loss by the use of anti-hog cholera serum and virus.

Other Diseases Menacing

There has been a variety of diseases in swine this year and in some cases the diagnosis has been rather difficult. There has probably been more disturbance resulting from the round worm or ascarid than in previous years. In order that good results be obtained by the use of serum and virus, it is advisable for the veterinarian to carefully investigate conditions in swine prior to immunization. Some serious results have followed the administration of serum and virus to pigs that were extensively infested with round worms. In other instances the losses after the use of serum and virus have been excessive because of the prevalence of infectious necrotic enteritis at the time the serum and virus were used. Bad results from improper feeding after immunization against hog cholera are less frequent than in former years. This latter fact is gratifying and indicates that veterinarians have been successful in educating swine producers to properly feed and care for their swine after the use of serum and virus.

Use Sufficient Virus

If the practitioner will carefully determine the condition of swine and particularly those that are apparently healthy prior to immunization, many of the so-called breaks will be prevented. It is always advisable to use a sufficient dose of serum and virus, particularly virus. Many of the difficulties encountered in herds after vaccination could have been avoided by the use of not less than two and probably three to five cubic centimeters of virus.

Diet Before and After Immunization

The preparation of swine for immunizing by withholding the feed prior to the injection of serum and virus and the restricted diet after immunization, is of great importance and should be emphatically impressed upon the care-taker. Swine affected with infectious necrotic enteritis should not be given the simultaneous treatment.

Give No Virus While Necrotic Enteritis Exists

If such herds are treated they should be given the serum alone and infectious necrotic enteritis properly treated, and when the animals have recovered from the enteric disturbance they should be given the simultaneous treatment. The administration of serum and virus and bacterin will frequently prevent future difficulty that would not be avoided by the use of serum and virus alone. Some practitioners believe it is good practice to use bacterins on all herds that are immunized against cholera.

Growths on the Mammae of Sows

Figures one and two display a common condition of sows which require surgical treatment. Figure one shows a nodular tumefaction involving one mammary gland. The enlargement is about the size of a cocoanut. Figure two shows a growth of irregular outlines invading two mammae, and is so large and pendulous as to mechanically interfere with locomotion.

These conditions being due to infection and fortunately circumscribed within the limiting capsule of the gland are easily removed surgically. They are now so common it seems advisable that a technique that will become standard be worked out.

Fig. I. Small Symmetrical Growth Involving One Mamma

Once the growth prevents the gland from functioning, no matter whether the entire gland is invaded ablation is indicated and should not be postponed. The longer it is postponed the more serious the operation will be, on account of the increased vascularity. The ablation should always be total. There is nothing ever gained by attempting to preserve a mamma by extirpation of a growth within the gland.

Hints on Ablation

The sow should be anesthetized with chloral given per rectum in the form of an aqueous solution. The dose is from three to four drams dissolved in a pint to a pint and a half of cold water. This is injected after emptying the rectum of fecal matter. It is best to give it twenty minutes before beginning the operation.

The patient is secured by stretching the legs forward and backward with ropes and controlling the head with a snout loop. A good procedure that is meeting with much favor consists of tying off the gland with sutures as near the level of the abdomen as possible but without stretching the ventral skin too much. The object of tying off at some distance from the growth is to leave a good strip of skin outside of the suture line after the excision is made, yet this must be done without stretching the skin enough to cause a wide gaping wound after sloughing has occurred.

The best suture is that described by Zecha on page 263 of the June issue but in lieu of this an ordinary tug suture may be used. The growth is pulled away from the body with large tumor forceps and the suture line marked out to follow the contour of the belly. The stitches should be short enough to assure perfect strangulation of the tissue within each of them when drawn taut, and to prevent bleeding or slipping of the cut ends into the subcutaneous space beneath. Subcutaneous bleeding is pitfall of tying off operations of any kind and in the case of mammae ablations where the surrounding skin is so loosely attached to the body it can prove very annoying

and even serious. To further prevent this, which is the only serious accident that can occur, the growth is excised a good distance from the suture line. That is, a strip of skin an inch or even two inches wide is left dangling outside the suture to slough off.

Carefully worked out the operation is without hazard and bloodless.

Fig. 2. Large Irregular Growth Involving Two Mammae

Technic of Cesarean Section

By H. W. Wilson, Helena, Arkansas

Place the sow on any improvised table, such as barn door on saw-horses or barrels; tie the two fore-feet and under hind leg together and administer an anesthetic. Hyocin 1-20 grains morphin 1¼ grains and cactin ⅜ minumo hypodermically, twenty minutes before operation is started will prepare the way for an easy general anesthesia with ether. One to three grains of morphin, according to size, is very good. Chloral hydrate, 1 to 16, per rectum (one dram per 100 lb.) has been used with varying results. In cases of relaxation of the sphincter ani difficulty is experienced in retaining the solution. If patient is too weak to resist handling, don't risk profound anesthetic. Just give a whiff when pain is manifested. It has been my misfortune to be compelled to do this operation without the aid of an intelligent assistant to administer the anesthetic, however, by picking out some cool-headed man, you can turn the patient over to him with less risk, if you tell him to give only one to two teaspoonsful each time the patient shows signs of distress, but don't allow an unskilled assistant to get profound anesthesia even in strong patients.

Shave an area between the last rib and external angle of the illium immediately below the lumbar vertebrae, as large as 10 to 12 inches wide and 18 to 24 inches long, paint with tincture of iodin and cover with large linen towel previously rung out of antiseptic solution. Then overlap this towel three or four inches on all of its border with more towels so that the entire side of the patient is covered. Make a bold incision downward and forward through the towel and abdominal wall to the peritoneum which should be done with as few incisions as possible, two to three strokes should carry from two and a half to four inches deep, depending on how fat the sow is. Open peritoneal cavity and by palpation determine whether or not

fetus can be expelled through vagina without incising the uterine horns. Small-sized birth canal, or badly swollen fetus, besides monstrosities, are some of the reasons for hysterotomy, but degenerative changes in the uterine wall, caused by emphysemia of the fetus are best handled by hysterotomy. Hysterotomy is done by grasping the gravid cornua nearest the opening and bringing it out to the top of towels, where incision is made near the body of the uterus, which is very short.

Examination of the other cornua may reveal other fetus, which should be gently pushed through the opening made by incision in first cornua, or where this is too slow or impossible, another incision must be made in the opposite horn by bringing it to the top of the primary opening and laying on the towels. By making the incisions in the cornua after it has been placed on top of the towels, all fluids are prevented from entering the abdominal cavity. Fetal membranes should not be expelled if not done easily. However, a milking motion often removes considerable of this refuse. What is left in the horn will be expelled in a few hours.

Suture the incision of the cornua, using catgut, Lembert sutures, before making any incision on the other cornua. After replacing the horns and uterus suture the peritoneum with a continuous suture of catgut and close the external opening with six or seven interrupted linen or silk sutures, through the skin, fat and

This figure illustrates an incision that is slightly too horizontal.

muscles. Dry with cotton and paint with tincture of iodin, after which cover with layer of pine tar.

HOG LOT CAN BE MADE ATTRACTIVE AND SANITARY

The accompanying cut showing two purebred spotted Poland China sows and their litters, the property of Dr. R. C. Mills of Redfield, Iowa, illustrates the possibility of producing and maturing of from 8 to 12 pigs per sow for each farrowing. The secret of suc-

cessful swine production is, first, proper breeding methods; second, proper feeding, and third, provision of sanitary surroundings. The swine production in the United States would be increased 50 to 80% by observing these three general rules.

FEEDING BROOD SOWS

Because of the excessive losses of pigs during the spring of 1922, there will be an unusually large number of sows bred for fall farrowing. Success in swine production is largely dependent upon the proper care in breeding and feeding. Brood sows that are provided a proper diet will produce better pigs than one that is not properly fed.

The ration for a sow from the time she is bred until farrowing should maintain her in a good thriving condition. Pregnant sows should not be fattened. Ground oats, barley or mill feed with a little corn is a good ration for pregnant sows. Pasturing on alfalfa, clover, etc., in addition to the grain ration is of great value to brood sows as pasturing insures exercise. The ration of sows, particularly those that are heavy milkers, should be reduced a few days before farrowing time and a limited ration should be provided for the first ten days after farrowing.

Scour in pigs and most of the digestive disorders can be prevented by properly dieting the sow.

The sow's ration, when the pigs are ten days old, should be increased until a maximum

milk flow is obtained, and such a ration should be maintained until the pigs are weaned. After the pigs are weaned, the sow should receive a ration that will tend to fatten slightly. This being particularly true in those cases in which the raising of the litter of pigs has reduced the flesh of the sow.

Many further suggestions might be made by the veterinarian to the hog breeder, along the lines of feeding. Of particular importance, is the feeding of the boar during the breeding season.

THE HOG CHOLERA MENACE

"Hog cholera was introduced into America about 1833, and until now has caused greater losses in swine than all other diseases combined. In 1921 the losses were estimated at $15,000,000."

"It appears to sweep the country in cycles of about ten years. The last general outbreak was in 1913 and 1914."

"It would be reasonable to anticipate on outbreak of the disease this year or next. According to available information all the serum produced would only immunize ten per cent of the hogs should there be an extensive outbreak."

"I am not throwing a scare, but it is possible that within the next few years the entire country might witness an outbreak of hog cholera which would deplete the greater percentage of the herds of the country."

—Dr. H. B. Brooks, Hamburg (Ia.) Reporter.

SWINE DYSENTERY

Purdue agricultural experiment station has reported the findings of a condition they have provisionally named swine dysentery. Although there may become minor differences, the symptoms and lesions as described are in the main the same as the symptoms and lesions of the condition that is usually known as infectious necrotic enteritis.

The specific cause of swine dysentery has not been identified. The B.suipestifer was found in many of the cases, but the investigators do not believe that it was the primary causative factor. It is hoped that the investigations will be continued and further definite knowledge relative to this important disease will soon be forthcoming.

"The chief difficulty in the control of hog cholera in 1921 was due to the failure of swine raisers to immunize their herds until hog cholera had appeared."—B. H. B.

It has been estimated that there were 12,424,000 brood sows on farms in the United States on April 1st, 1922. An increase of 11.1% over the number on the same date in 1921.

Tetanus toxin is rendered non-toxic when subjected to the action of formol in diffused light. This non-toxic tetanus toxin retains its immunizing property. This finding is interesting and probably a safe and an efficient method of immunization against tetanus with the non-toxic toxin will soon be forthcoming.

"Do you want to vaccinate your hogs? If so, come to the vaccination school," announces an Iowa farm adviser, while one in Illinois advertises, "Hog Serum Service. Hog cholera outbreak in the county means more service by the farm bureau and more money saved by its members."

Albiston has recently reported the occurrence of pulmonary actinomycosis in shoats from four to five months of age. It has been suggested that the pigs became infected by drinking milk from cows affected with mammary actinomycosis. It has generally been assumed that actinomycosis is not readily transmitted from one animal to another and these findings are of considerable interest.

IMMUNIZATION BEST INSURANCE

The safe procedure, we believe, is the better policy and recommend the following: The veterinarian can recognize the different swine ailments and should therefore be charged with the vaccination of all swine. In those cases where hog cholera exists on a farm all suckling pigs should be given the serum alone treatment and this should be followed up with the simultaneous treatment about two weeks after weaning. All pigs on all farms where cholera does not exist should be given the simultaneous treatment about two weeks after weaning. The intraperitoneal injection of serum has many advantages and this method is probably most desirable for the immunization of pigs. There is no doubt that the simultaneous treatment with anti-hog cholera serum and virus is the cheapest insurance a swine breeder can obtain and it is much more economical to have the swine immunized when small, two weeks after weaning, than after the swine become larger.

Abstracts of Foreign Literature

Edited by A. EICHHORN, D. V. S.

BLOOD INOCULATIONS CONTROL FOOT-AND-MOUTH DISEASE

Mortality Lowered

The injection of blood from animals recovered from foot-and-mouth disease has proven satisfactory in the malignant form of foot-and-mouth disease during the outbreak in the Canton Lucerne. Good results were especially observed in case the injection was made at the earliest time; that is, as soon as the first cases of the disease have been observed. Such blood injections are indicated in all cases when the disease takes up the malignant form and extends over a large territory. The injection resulted in a milder course of the disease and therefore a reduction in the mortality (death rate among uninoculated animals 23.05%, in inoculated animals 2.2%).

The milk yield was also favorably influenced by the injection of the blood. Furthermore it was possible to permit the use of the milk for consumption at a much earlier time on account of the more rapid course of the disease and the possibility of an earlier disinfection of the stable.

Death Bleeding the Preference

For the preparation of the blood the death bleeding of the animals with subsequent meat inspection should be preferred to the partial bleeding from the jugular vein. Such animals should also be tuberculin tested and a careful examination be made prior to bleeding. It is recommended to use the mixture of blood from several animals. In case of prevalence of the disease in large areas, it is indicated to provide a laboratory for the production of such blood.

Sometimes a Disadvantage

The subcutaneous injection on both sides of the animal with subsequent massage of the point of inoculation is preferable to the injection of the blood on one side. Inasmuch as by such procedure the appearance of inoculation abscesses is prevented or reduced to a minimum. A disadvantage of such inoculations aside from the abscess formation is that frequently there is a delayed development of the disease in the herd as a result of the passive immunity produced by the injection.

The injection does not protect the animals from complications but if they do develop they are of a milder character. The blood examinations reveal that the principal cause of the slow sedimentation of the red blood cells in the cattle blood is due to the slight agglutinating qualities of the erythrocytes.

SEDIMENTATION OF THE RED BLOOD CELLS IN DIAGNOSING PREGNANCY IN MARES

Fahraeus in his experiments on the stability of the suspension of the red blood corpuscles in man found that the rapidity of the sedimentation of the corpuscles in the blood of healthy men is slow and quite constant, but that during pregnancy it is enhanced to such a degree that the increased rapidity of the sedimentation may be of diagnostic importance. Stoss conducted similar experiments with horses which indicated that pregnancy in the mare exerts no influence on the rapidity of the sedimentation of the red blood corpuscles. The fluctuations in the pregnant animals are within the borders of non-pregnant animals. Therefore, the sedimentation phenomena cannot be utilized in mares as a diagnostic means of pregnancy.

SYMPTOMS OF OPEN UTERINE TUBERCULOSIS

As open cases of uterine tuberculosis we must accept all cases of tuberculosis of the uterus, Fallopian tubes and of the peritoneum, both in cases of general infections as well as in cases of localization in any of these parts, provided that the uterine secretions proved on bacteriological examination to contain tubercle bacilli. The open cases of uterine tuberculosis occur in association with other forms of tuberculosis most frequently with the pulmonary form. In the majority of cases, however, it is confined to these organs. In uterine tuberculosis the rectal examination may reveal changes in the uterus, Fallopian tubes, the ovaries and in the peritoneum. Changes in the pelvic lymph glands are only exceptionally found. Changes of a tubercular nature are indicated by an enlargement and stiff or nodular con-

sistence of the uterus, nodular and bead string-like consistence of the fallopian tubes, enlargement and hardening of the ovaries and nodules on the peritoneum. The cervix in uterine tuberculosis may be either closed or more or less open. The external symptoms for open cases of uterine tuberculosis are irregular, and abnormal sexual desire especially in association with the drop of the pelvic ligaments. A discharge from the uterus of a mucopurulent character containing whitish yellow flakes. Both of these symptoms or only one may be present and should be considered as a suspicion towards open uterine tuberculosis. In the presence of one or both of these symptoms a rectal examination should be made for the determination of changes in the internal organs as described above. Should such an examination reveal changes in any of the organs or on the peritoneum even without an indication of an involvement of the corresponding lymph glands, the presence of uterine tuberculosis should be considered as established. The absolute diagnosis, however, depends in all cases on the bacteriological findings in the uterine secretions.

SOME OBSERVATIONS ON PREGNANT COWS

The gravid uterus attains at the end of the second month a weight of about 1 kg. At the third month the weight 1-3 kg. (average weight 2.175 kg.); in the fourth month 2.5-9 kg. (4.998 kg.); in the fifth month 6-15 kg. (10.993 kg.); in the sixth month 8-25 kg. (16.535 kg.); in the seventh month 20-32 kg. (24.533 kg.); in the eighth month 32-45 kg. (38.180 kg.); in the ninth month until the termination of pregnancy 40-80 kg. (52.480 kg.), in the tenth month 53.850 kg.

The determined weights of the fetuses for the second half of the pregnancy were for the sixth month 1-8 kg. (3.985 kg.); in the seventh 8-15 kg. (10.333 kg.); in the eighth month 15-20 kg. (19.170 kg.); in the ninth month 20-40 kg. (28.800 kg.); in the tenth month 30-40 kg. (32.500 kg.).

The number of placentomas does not increase after the end of the second month in the gravid horn, whereas in the non-gravid horn they no longer increase from the end of the third month. The total number of placentomas in both horns fluctuated between 42 and 132 with an average of 70 to 110 as the outside limits. In the gravid horn the number of the placentomas proved to be 38-90. In the non-gravid horns 0 to 55.

Thre is no change in the Fallopian tubes during pregnancy. In general the ovaries become heavier with the age of the animal. The corpura lutea neither increased nor decreased in weight during pregnancy. The specific gravity of the allatonic fluid increases during pregnancy, that of the omnionic fluid remains almost unchanged, although the latter takes up more or less of a slimy consistence towards the end of pregnancy.

VALVULAR HEMATOMES ON THE ARTERIO-VENTRICULAR VALVES

Blood cysts occur on the valvular apparatus of the heart in man as well as in the various animals. The material used by Kowanz for his investigations originated from horses and dogs which died a natural death, or which were destroyed on account of disease, age, malnutrition, etc. Cysts were demonstrated in twenty-two horses (8.76%) out of 251 examined and in 25 cases (5%) out of 500 dogs. Most frequently they were found to be poppy seed to hemp seed sizes; more rarely they attained the size of a pea. The endocardial covering is smooth and lustrous. The histological examination reveals a nodular, cellular-fibrous structure of the cysts which must be considered as the result of a preceding organization process. Yellowish pigmented flakes are indicative of broken down red blood corpuscles; thrombi are also present and may be surrounded by a calcareous border. Kowanz succeeded also in establishing a connection with the surface of the ventricle. The formations, therefore, indicate the development of the cysts from hematomes which originate from the ventricular cavity.

Frankenstein is of the opinion that infants are not capable of forming anti-bodies and therefore vaccine therapy in them amounts to nothing more than parenteral protein body therapy. If this is universally true then, wouldn't it be possible to immunize infant pigs against hog cholera?

According to Edmonds and Kammlade, corn when sound and properly fed with legume roughage is satisfactory feed for horses.

1. Schw. Arch. f. Tier. Vol. 63. No. 8.
2. Munch. Tier. Woch. 1921. No. 38.
3. Inaug. Dissert. Giessen, 1921.
4. Archiv. f. Wiss. u. Prakt. Tier. Vol. 47. No. 4.
5. Deut. Tier. Woch. 1921, pg. 153.

Parasitology

Edited by MAURICE C. HALL, Ph.D., D. V. M.

The Eggs and Larvae of Poultry Parasites

THE eggs of most of the flukes occurring in poultry are of the usual elliptical shape and provided with an operculum at one end. Some of the egg sizes in microns are as follows: Typhlocoelum obovale (duck, trachea, bronchi, lungs, etc.), 154 to 180 by 90; Tracheophilus sisowi (duck; air passages of lungs), 122 by 63; Opisthorchis simulans (duck; biliary canals), 28 by 16 to 18; Metorchis xanthosomus (duck; biliary canals), 27 to 32 by 14; Echinostoma revolutum (duck, goose, swan, chicken; intestine; U. S.), 94 to 114 (Fig. 1); E.recurvatum (duck, chicken; intestine),

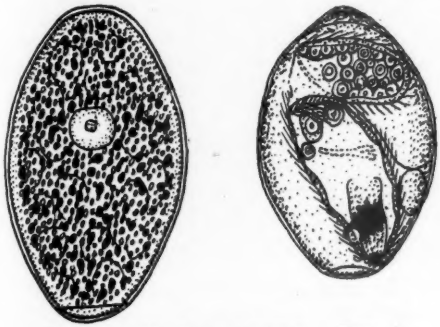


Fig. 1. *Echinostoma revolutum.* Eggs in various stages of development. x 34. From Johnson, 1920.

110 by 80; Hypoderaeum conoideum (duck, goose, chicken; intestine), 95 to 108 by 61 to 68; Prosthogonimus cuneatus (chicken, peafowl; bursa of Fabricius; U. S.), 22 to 27 by 13 to 16; P.ovatus (chicken; bursa of Fabricius and oviduct), 22 to 24 by 13; P.intercalandus (chicken; oviduct and body cavity), 29 by 15; P.pellucidus (chicken; bursa of Fabricius and oviduct), 27 to 29 by 11 to 13; P.japonicus (chicken; probably bursa of Fabricius), 24 by 12; Strigea gracilis (duck; intestine), 110 by 67; Cyathocotyle orientalis (duck; ceca and small intestine), 100 by 65.

Some fluke eggs are not of the conventional shape given above. The eggs of Catatropis verrucosa (Fig. 2) are elliptical, 23 microns long by 11 microns wide, with a filament 160 microns long at each pole; this fluke occurs in the cecum and rectum of the goose. The eggs of Bilharziella polonical are elongate anteriorly and have a small terminal spine posteriorly; this fluke occurs in the blood vessels of the duck.

There are many species of tapeworms which occur in the intestines of poultry. A very small number of these belong to the group of bothriocephalid worms and as such have thick-shelled eggs with an operculum or lid at one end. Such an egg has already been figured in a previous paper for a related worm, Diphyllobothrium latum, one of the dog tapeworms. Schistocephalus solidus, a tapeworm from the intestine of the duck, has similar eggs, the eggs being 44 to 54 microns long by 35 to 38 microns wide.

The eggs of tapeworms belonging to the family Hymenolepididae have several thin, transparent shells or membranes, as a rule. In the case of Choanotaenia infundibulum (chicken, turkey; U. S.), the eggs are oval, with a thin membrane next to the onchosphere, then a thick, smooth membrane, and then one or two very thick outer membranes, 60 to 65 microns long by 40 to 45 microns wide, and with a delicate appendage at each pole. The eggs of Hymenolepis anatina

Fig. 2. *Catatropis verrucosa.* Eggs. x 215. From Neumann, 1909, after Dujardin.

(duck, swan) have the characteristic shape figured here (Fig. 3) and are 125 to 175

microns long by 90 microns wide. The eggs of H.tenuirostris (duck, goose) are almost cylindrical and 85 microns long (Fig. 4). Usually these tapeworm eggs are globular or subglobular to elliptical. The diameters of the eggs are given here in microns for the following species: H.carioca (chicken, turkey; U. S.), 36 to 75; H.exilis (chicken), 56 to 65; H.cantaniana (chicken, turkey, peafowl; U. S.), 45 to 60; H.columbae (pigeon), 36; H.collaris (duck, goose), 42 to 44; H.megalops (duck; U. S.), 45 to 57; H.venusta (duck), 47 by 30; H.sagitta (duck), 44 by 34; H.setigera (goose), 53 by 28; H.fedtschenkowi (chicken), 75 by 50; Drepanidotaenia lanceolata (goose, duck), 50 by 35 (Fig. 5); Monopylidium gallinarum (chicken), 35; Amoebotaenia sphenoides (chicken; U. S.), 42 (Fig. 6); Metroliasthes lucida (turkey, chicken, guinea fowl; U. S.), 75 by 50 (Fig. 7).

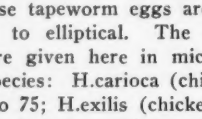


Fig. 3. *Hymenolepis anatina.* Egg. Enlarged. From Braun, 1897, after Schmidt.

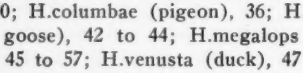


Fig. 4. *Hymenolepis tenuirostris.* Egg. x 240. From Krabbe, 1869.

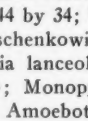


Fig. 5. *Drepanidotaenia lanceolata.* Egg. x 300. From Stiles, 1896, after Railliet.

Fig. 6. *Amoebotaenia sphenoides.* Egg. x 374. From Meggitt, 1914.

The eggs of tapeworms belonging to the family Davaineidae also have thin, transparent shells or membranes and are very similar to those of tapeworms belonging to the Hymenolepididae. Those of poultry tapeworms are usually globular or subglobular, but sometimes elliptical. The diameters of the eggs are given here in microns for the following species: Davainea proglottina (chicken; U. S.), 35 to 40 (Fig. 8); D.tetragona (chicken, turkey, guinea fowl; U. S.), 25 to 50 (Fig. 9); D.friedbergeri (turkey), 34 to 38; D.bothrioplitis (chicken), 25 to 40; D.echinobothrida (chicken; U. S.), 25 to 50; D.cesticillus (chicken, turkey, guinea fowl; U. S.), 36 to 42 (Fig. 10), according to some writers, or 65 by 50, according to others; D.microcotyle (duck), 40; D.vigintivasus (chicken), 55.

The family Anoplocephalidae is represented by the species Bertiella delafondi parasitic in the intestine of the pigeon. The egg (Fig. 11) of this worm has 2 thin shells outside of the onchosphere and is 55 to 65 microns in diameter; the piriform apparatus, noted in a previous

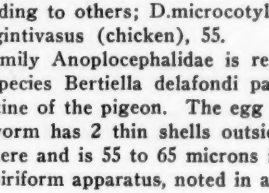


Fig. 7. *Metroliasthes lucida.* Egg. x 758. From Ransom, 1900.

paper as present in eggs of cattle tapeworms belonging to this same family, Anoplocephalidae, is not present.

The family Fimbriariidae is represented by the species Fimbriaria fasciolaris, parasitic in the duck and goose. The egg has thin shells and is 37 to 45 microns long by 21 to 23 microns wide.

Fig. 8. *Davainea proglottina.* Egg. Enlarged. From Stiles, 1896, after Blanchard.

The eggs of nematodes belonging to the superfamily Spiruroidea are usually elliptical and contain embryos when deposited. Most of the following species occur in the digestive tract, usually embedded more or less in the tissues. Oxyspirura mansoni and O.parvovum

Fig. 9. *Davainea tetragona.* Egg. From Lopez Neyra, 1920.

occur in the eyes, but the eggs pass through the lachrymal ducts and are swallowed, escaping in the droppings. Filaria gallinarum is a

spirurid, not a Filaria, but its description does not permit of its assignment to a genus of spirurids at present. The dimensons of some of these spirurid eggs in microns are as follows: Filaria gallinarum (chicken), 40 by 24; Oxyspirura mansoni (chicken, turkey, peafowl; U. S.), 50 to 65 by 40 to 45 (Fig. 12); O.parvovum (chicken), 33 to 45 by 25 to 30; Streptocara pectinifera (chicken, guinea fowl), 33 by 20; Gongylonema ingluvicola (chicken; U. S.), 50 by 36; Dispharynx spiralis (chicken, guinea fowl, pigeon), 36 to 40 by 19 to 21; Cheilospirura hamulosa (chicken; U. S.), 30 by 20; Tetrameres fissispina (duck, turkey, chicken, pigeon), 50 by 28; T.confusa (chicken, turkey, pigeon), 33 by 24; T.gigas (duck), 50 by 21; Physaloptera bulbosa (peafowl), 44 by 26.

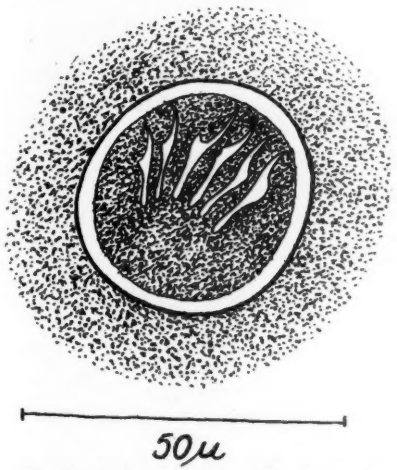


Fig. 10. *Davainea cesticillus.* Egg in capsule. From Lopez Neyra, 1920.

The eggs of nematodes belonging to the superfamily Strongyloidea are usually thin-shelled and elliptical and are usually segmenting when deposited. The dimensions in microns

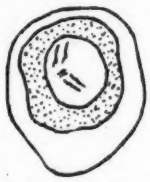


Fig. 11. *Bertiella delafondi.* Egg. Enlarged. From Johnston, 1918.

of some of the eggs of worms in this superfamily are as follows: Trichostrongylus tenuis (chicken, duck, goose; cecum), 66 to 75 by 35 to 42; Ornithostrongylus quadriradiatus (pigeon; intestine; U. S.), 70 to 75 by 38 to 40; Epomidiostomum orispinum (goose; esophagus and proventriculus), 95 by 55; E.anatinum (duck; gizzard), 74 to 80 by 48 to 50; Syngamus trachealis (chicken, turkey, peafowl; U. S.), 85 to 90 by 50, with operculum at each end (Fig. 13); S.bronchialis (goose, duck; larynx, trachea and bronchi), 80 to 90 by 60, with an operculum at one end. The eggs of Amidostomum anseris (goose, duck; esophagus, proventriculus and gizzard) are 84

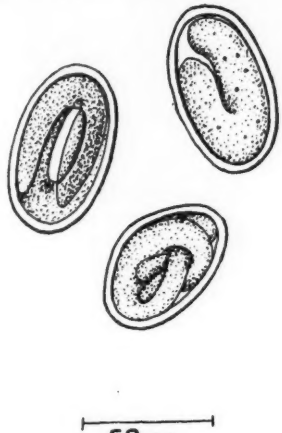


Fig. 12. *Oxyspirura mansoni.* Eggs. From Ransom, 1904.

microns long by 50 microns wide and contain an embryo when deposited.

The eggs of the worms belonging to the family Heterakidae of the superfamily Oxyuroidea are usually thick-shelled and are usually

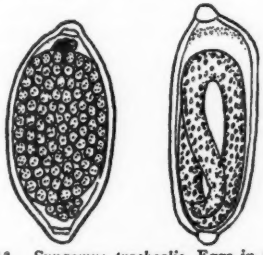


Fig. 13. *Syngamus trachealis.* Eggs in various stages of development. Enlarged. From Neumann, 1909, after Railliet.

not yet segmenting when deposited. The dimensions of some of these eggs in microns are as follows: Heterakis papillosa (chicken, turkey, guinea fowl, peafowl, duck, goose; ceca; U. S.), 63 to 71 by 38 to 48 (Fig. 14); Ascaridia perspicillum (chicken, turkey, guinea fowl; intestine; U. S.) 75 to 80 by 45 to 50;

A.lineata (duck, chicken; intestine), 80 by 50; A.columbae (pigeon; intestine; U. S.), 60, 68, 72 and 80 to 90 microns long, according to various writers, by 40 to 50 microns wide. A member of the same family, Subulura differens (chicken, guinea fowl; intestine), has eggs which are almost spherical, 59 microns long by 50 microns wide, containing embryos when deposited.

The worms belonging to the superfamily

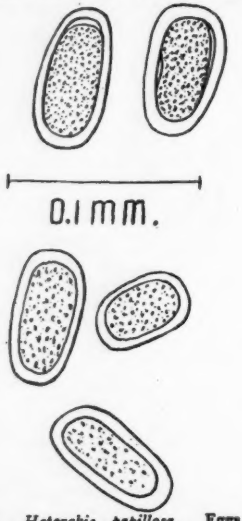


Fig. 14. *Heterakis papillosa.* Eggs from uterus. Adapted from Lane, 1918.

Trichuroidea have lemon-shaped eggs as a rule. The dimensions in microns of the eggs of some of these worms are as follows: Capillaria retusa (chicken, guinea fowl; intestine and ceca), 45 to 65 by 18 to 24, or by 28 to 32, according to some writers; C.collare (chicken; intestine), 66 by 30; C.meleagris (turkey; intestine and ceca), 54 to 56 by 25 to 27; C.contorta (duck; esophagus and crop), 48 to 56 by 21 to 28 (Fig. 15); C.anatis (goose; intestine

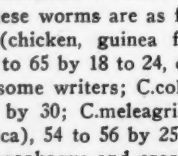


Fig. 15. *Capillaria contorta.* Eggs. x 300. From Railliet, 1893.

and ceca), 42 to 46 by 24 to 25; C.dujardini (pigeon; intestine), 53 to 56 by 28 to 32; C.strumosa (chicken; esophagus and trachea), 60 to 66 by 28.

The eggs of the following nematodes are somewhat oblong and truncated and have tuberculated or pitted shells: Hystrichis tricolor (duck; esophagus and proventriculus), 85 to 88 by 36 to 40; Eustrongylides elegans (duck; esophagus and proventriculus), 60 to 70 by 33 to 38 (Fig. 16); E.tubifex (duck; intestine), 65 to 75 by 44; E.papillosus (duck, goose; espohagus), 68 by 36.

The eggs of the echinorhynchs or thorny-headed worms of birds are elliptical and thick-shelled, similar to those previously described for such worms from other domesticated ani-

Fig. 17. *Filicollis anatis.* Egg. x 340. From Luehe, 1911, after Marval.

mals. Two species of echinorhynchs which occur in the intestine of the duck, goose and swan are Polymorphus minutus, with eggs 91 to 110 microns long by 26 to 30 microns wide, and Filicollis anatis (Fig. 17), with eggs 56 to

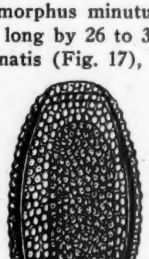
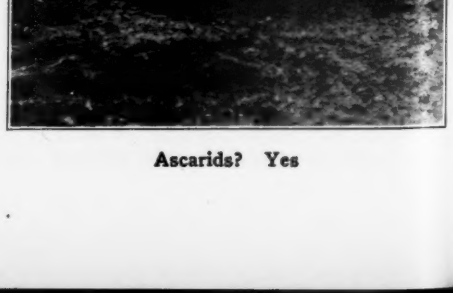


Fig. 16. *Eustrongylides elegans.* Egg. Enlarged. From Jägerskiöld, 1909.

60 microns long by 26 to 30 microns wide, according to some writers, or 62 to 70 microns long by 19 to 23 microns wide.



Ascarids? Yes

Zootechnics

Edited by E. MERILLAT, M. D. V.

ANOTHER INCENTIVE TO TEST CATTLE FOR TUBERCULOSIS

An announcement of more than usual interest to practicing veterinarians and to farmers who employ them has recently been made by the National Live Stock Exchange. This organization, which includes in its membership all of the big packers as well as many of the smaller packers, recommends that all its members pay a premium of ten cents per hundred above the market price agreed upon in the sale transaction on all carloads of hogs shipped from counties certified by the federal and state sanitary officials as free from tuberculosis, when such a shipment is accompanied by a sworn statement from an authorized veterinarian to the effect that the consignment of hogs was bred and fed within the confines of the said county and stipulating further that the hogs to the owner's knowledge have not been exposed to the germs of tuberculosis.

The Chicago packers have agreed to this and have gone one step further than the national organization recommended by agreeing to pay this ten cent bonus on individual shipments of hogs bred and fed on farms where the herds are accredited, if the owner or owners request a special kill on such a consignment and provided the hogs on postmortem examination do not show lesions of tuberculosis. It is understood that the bonus is to be paid on hogs from an accredited county or area without their being subject to the postmortem inspection check.

This spirit of cooperation on the part of the packers should be commended, even though they have nothing to lose and much to gain by the plan. Their proposition is certain to be helpful in furthering the accredited herd and county wide projects for tuberculosis eradication which are now so well under way in nearly all states.

F. B. Hadley, D. V. M.

Madison, Wisconsin.

The Commissioner of Health of Chicago estimates that the losses from rats in that city are no less than a million dollars per month.

Excess of protein in the feed of mother rats produces metabolic and nervous disorders in the suckling. Some of the derangements in young pigs, calves and colts may be due to a similar excess protein in the feed of their mothers.

A rather extensive outbreak of rabies in coyotes occurred in Washington recently. The biologic survey has been active. In trapping and poisoning the coyotes in the district where the outbreak occurred. Some new cases were reported recently and it is feared that the disease may become widespread as it did in 1915.

NEW MILK ORDINANCE FOR KANSAS CITY

The local veterinary association of Kansas City is at present cooperating with the food and health department of that city, in an attempt to apply the North milk ordinance. Dr. North was called to Kansas City in 1921 to make an extensive milk survey and recommendations for the future regulations of the milk supply to that city. The ordinance that North recommended and which has been adopted with slight modifications by the council, stipulates that the milk be of two general groups. First, pasteurized and second, whole raw milk. It is further stipulated that cows producing whole raw milk must be given a monthly clinical examination and all cows showing any abnormality and particularly of the udder, must be removed from the herd. The outcome of the conference and the enforcement of this ordinance is anticipated with interest.—A. T. K.

FILLED MILK LAW UPHELD

The Wisconsin Supreme Court has upheld the constitutionality of the Filled Milk law prohibiting the manufacture and sale of filled milk in that state. The decision is of exceptional interest in that it not only puts a stop to a questionable industry that prospered at the expense of the dairy interests but also

because it upheld the power of the legislature to prohibit all things which jeopardize the public health.

In concluding its review of the case the court says: "The principle of allowing these compounds to be manufactured and sold will lead from 'filled' milk to 'filled' butter and from 'filled' butter to 'filled' cheese and finally we may have the 'synthetic' cow taking the place of this domestic animal on the farms. Vegetable fats, cheap, but lacking in essential elements of vigorous life will take the place of butterfats of demonstrable value. A great industry of the state will decline a victim of 'national advertising' of cheap and deceptive substitutes."

BIOLOGICAL SURVEY DISCOVERS TWO NEW RACES OF SKUNKS

Two hitherto unrecognized geographic races of skunks of the genus Conepatus, the hog-nosed type, have been described by the Biological Survey, of the United States Department of Agriculture. This general kind of skunk ranges for the most part from southern South America north to southern Arizona, where it reaches its northernmost limits. One of the two new forms, known as the Arizona hog-nosed skunk, is found in southern New Mexico and Arizona; the other, the Nelson hog-nosed skunk, is native to Mexico.

The fur of the hog-nosed skunk is not so valuable as that of the ordinary black skunk owing to the poorer texture and to the fact that the tail and much of the back are white. This type of skunk is better equipped for rooting than others because of the greater length and strength of its snout, and it is probably useful in the control of certain insects.

(U. S. Clip Sheet)

Air-Born Contagions

A clew as to how diseases such as influenza may be spread broadcast may be taken from a recent report of the United State weather bureau which states that dust from the Sahara Desert was found to have settled thickly on the deck of a vessel 250 miles away and has even been observed on ships at the distance of 1,500 miles from shore.

Bishopp and Laake have determined that the ordinary house fly may travel a distance of 13.14 miles; Screw worms 15.1 miles, and L. caesar 3.5 miles. The distance traveled was determined on some other flies, the result being obtained from a study of 234,000 marked flies. Two factors were found to determine their dispersion after liberation, desire for food and a suitable place for ovipositing.

Whipping cream should contain from 25 per cent to 30 per cent butter fat. It should be cool, sweet and unpasteurized.

More than 100 scrub bulls have been replaced by pure-breds in Virginia during the last two months according to a report from the U. S. department of agriculture.

Each bull elk has two teeth of such high selling value that thousands of these game animals are ruthlessly killed in the Yellowstone National Park region every year for no other purpose than that of obtaining these trinkets.

Good, pure draft fillies can be produced more satisfactorily when provided with good pasture and legume roughage. Good pastures are absolutely essential in the production of good horses.

The average milk production of all cows kept for dairy purposes in the United States is estimated to be 3,250 lbs. a year; that of the dairy cows of Holland, 7,785 lbs.; of Switzerland, 6,950 lbs., and that of Denmark 5,666 lbs.

Chevo has been selected as a name for the flesh of the goat. This name was the choice out of 2,500 names submitted to the Goat Raisers' Association of Texas. Every veterinarian should memorize this name and call on his butcher for chevo when he wants goat meat.

There is a bill pending in Congress known as the "Filled Milk" bill. The import of this bill is to prohibit the interstate shipments of skimmed milk and vegetable oil matter to appear as whole evaporated milk. This bill favors the dairy interests and should be supported by veterinarians.

Blathewick and Long have found that the consumption of quantities of lactic acid in milk or milk products results in the formation of strongly acid urine. The increased acidity of the urine was found to be due to an excretion of acid phosphate. The lactic acid appears to have been completely oxidized as there was no evidence of its excretion.

Canine, Feline and Avian Practice

Differential Diagnosis and Treatment of Poultry Diseases

By R. F. Beaudette, Manhattan, Kansas

Roup

I. Symptoms:
1. Cheesy exudate in eye.
2. Diphtheritic membranes in mouth, throat, etc.

II. To Be Differentiated From:
1. Nutritional disease.
2. Coccidial roup.
3. Sod disease.

III. Flock Treatment:
1. Isolation of sick birds.
2. Thorough disinfection of premises.
3. Elimination of predisposing factors.
4. Epsom salts.
5. Potassium permanganate in drinking water.

IV. Individual Treatment:
1. Removal of exudate.
2. Application of antiseptics.

Fowl Cholera

I. Characterization and Symptoms:
1. Short duration.
2. High mortality.
3. Elevated temperature (109-112° F.)
4. Profuse diarrhea (droppings yellow or green).
5. Cyanosis of comb and wattles.

II. Post Mortem:
1. Enlarged and congested liver, spleen and kidneys.
2. Hemorrhages on heart and intestinal mucosa.
3. Ureters distended with urates.
4. Lungs congested or pneumonic.
5. Mouth and pharynx filled with mucus.

III. To Be Differentiated From:
1. Fowl typhoid.
2. Botulism.
3. Nutritional disease.
4. Blackhead.
5. Coccidosis.
6. White diarrhea.

IV. Control:
1. Isolation or destruction of affected birds.
2. Thorough disinfection.
3. Epsom salts (teaspoonful to the bird).
4. Potassium permanganate in drinking water.
5. Vaccination.

Fowl Typhoid

I. Characterization and Symptoms:
1. Short duration.
2. High mortality.
3. Elevated temperature (109-112° F.).
4. Usually diarrhea (droppings green).
5. Anemic comb and wattles.

II. Post Mortem:
1. Liver friable with grayish points of necrosis.
2. Intestines pale, catarrhal or congested.
3. Kidneys congested.
4. Heart pale with grayish points.

III. To Be Differentiated From:
1. Cholera.
2. Botulism.
3. Nutritional disease.
4. Coccidiosis.
5. White Diarrhea.

IV. Control:
Same as cholera.

White Diarrhea (Bacillary)

I. Characterization and Symptoms:
1. A disease of baby chicks.
2. Very high mortality.
3. Diarrhea (droppings white).
4. Constant peeping.
5. Unthriftiness (short back and pot bellies).

II. Post Mortem:
1. Unabsorbed yolk.
2. Intestines catarrhal and congested.
3. Liver usually yellow or congested.
4. Congestion of lungs.

III. To Be Differentiated From:
1. Coccidiosis.

IV. Prevention:
1. Disinfection of incubators and brooders.

2. Hatching eggs from known healthy stock.

V. Eradication:
1. Agglutination test.

VI. Treatment:
1. Sanitation and isolation of affected chicks.
2. Feed only buttermilk or sour milk.

Coccidiosis

I. Characterization:
1. A disease of young chicks (2 weeks to 3 months).
2. Diarrhea (droppings white).
3. Unthriftiness and emaciation.
4. Occasionally fibrinous conjunctivitis.

II. Location of Lesions:
1. Ceca.
2. Small intestines.
3. Liver.
4. Eyes.

III. To Be Differentiated From:
1. White diarrhea.
2. Intestinal parasitism.
3. Fowl typhoid.
4. Cholera.
5. Roup.
6. Nutritional disease.
7. Blackhead.

Tuberculosis

I. Characterization:
1. A disease of older birds.
2. Long duration.

II. Symptoms:
1. Emaciation and unthriftiness.
2. Diarrhea.
3. Lameness.
4. Anemic comb.

III. Cardinal Features:
1. An adominal disease.
2. Lesions in organs rather than lymph glands.
3. Caseation rather than classification.

IV. Location of Lesions In Order of Frequency:
1. Liver; 2. Spleen; 3. Intestines; 4. Ceca; 5. Mesentery; 6. Gizzard; 7. Lungs; 8. Kidneys; 9. Ovary; 10. Skin.

V. To Be Differentiated From:
1. Nutritional disease.
2. Intestinal parasitism.
Ante-morten.
Post-mortem.
3. Air-sac mite infestation.
4. Rheumatism.
1. Blackhead.
2. Nodular taeniasis.

V. Eradication:
1. Keep only birds under 1 year of age and on new ground.
2. Kill all visibly affected birds.
3. Intradermal test.

Blackhead (Entero-Hepatitis)

I. Characterization and Symptoms:
1. A disease of young turkeys.
2. Diarrhea (droppings yellow).
3. Emaciation and unthriftiness.
4. Elevated temperature.
5. Cyanosis of comb.

II. Location of Lesions:
1. Ceca.
2. Liver.

III. To Be Differentiated From:
1. Cholera.

IV. Treatment:
1. Sanitation and isolation.
2. Crude catechu in drinking water.

Botulism (Limberneck)

I. May Occur After:
1. Feeding spoiled canned goods.
2. Rains followed by hot weather.

II. Symptoms:
1. Limberneck.
2. Bright red comb.
3. Subnormal temperature (92-104° F.).
4. Mucus in mouth.
5. Loosness of feathers.
6. Diarrhea.

III. Post Mortem:
1. Catarrhal enteritis occasionally hemorrhages.

IV. To Be Differentiated From:
1. Cholera.
2. Fowl typhoid.
3. Nutritional disease.
4. Intestinal parasitism.
5. Wry neck.

V. Prevention:
1. Careful feeding.

VI. Treatment:
1. Epsom salts.
2. Antitoxin.

Nutritional Disease

I. Symptoms:
1. Cheesy mass in eye.
2. Subnormal temperature.
3. Cyanosis or anemic comb.
4. Emaciation.
5. Diarrhea.

II. Location of Lesions:
1. Eye.
2. Esophagus.
3. Kidneys.

III. To Be Differentiated From:
1. Roup.

2. Coccidial roup.

IV. Treatment:
1. Add greens to ration.

Bumblefoot

I. Symptoms:
1. Swelling of sole of foot.
2. Lameness.

II. To Be Differentiated From:
1. Scaley leg.
2. Sod disease.
3. Tuberculosis.
4. Rheumatism.

III. Treatment:
1. Surgical.
2. Removal of predisposing factors.

Sod Disease

I. Characterization and Symptoms:
1. Chicks usually affected.
2. Blisters on top and between toes.
3. Lameness and distortion of toes.
4. Head occasionally affected.

II. To Be Differentiated From:
1. Bumblefoot.
2. Roup.
3. Coccidiosis.
4. Pox.

III. Treatment:
1. Kerosene.

IV. Prevention:
1. Avoid sod.

Parasitic Diseases

Internal Parasites:

A. Tape Worms

I. Symptoms:
1. Emaciation and unthriftiness.
2. Occasionally wry neck.

II. Treatment:
1. Start starving birds in morning.
2. Epsom salts in evening.
3. Medication in morning: Turpentine 1 to 2 drams with olive oil, or oats 1 pint, corn 1 pint, lye 1 teaspoonful, cook 2 hours and feed.
4. Epsom salts 3 hours later.

B. Round Worms

a. Large round worms (small intestines).
b. Small round worms (seca).

I. Symptoms:
1. Same as for tape worms.

II. Treatment:
1. One pound of tobacco stems cooked in water for 2 hours and incorporated with one-half the usual ration.

C. Gape Worms

I. Characterization and Symptoms:
1. A disease of young chicks.
2. Unthriftiness.
3. Extension of head in gasping for breath.

II. Treatment:
1. Tracheal injections of 1 c.c. of a 5% aqueous solution of sodium salicylate.

D. Air-Sac Mites

I. Symptoms:
1. Emaciation and unthriftiness.
2. Anemia of comb.

II. Eradication:
1. Kill all visibly affected birds.
2. Disinfection of premises or removal to new ground.

External Parasites:

A. Lice

I. Treatment:
1. Dust with sodium fluoride; or
2. Sodium fluoride dip (1 oz. to gal. of water).

B. Mites

a. Scaley leg.

I. Treatment:
1. Wash parts with soap and water.
2. Medication: Caraway oil 1 part and olive oil 4 parts; or sulphur 1 part and lard 9 parts.

b. Depluming mite.

I. Treatment:
1. Same as for scaley leg.

II. House Spray for Mites:
1. Dissolve ½ pound of soap in 1 gal. of water and add 2 gal. of kerosene. This to be mixed with 17 gal. of water to use as spray.

* Outlines of an address delivered before the Missouri Vet. Med. Assn., June 25, 1922.

Must Have Abundance of Minerals and Grit

Every chicken must have an abundance of mineral in some form. I differentiate between grit and shells. There are a great many people who want to find something that will do both. It is a good deal like a man who will find a cow that will produce a lot of milk and a lot of beef. It can't be done. The hen that lays the eggs can't produce a lot of meat. The mineral that acts as good grit or teeth for that chicken is not going to be a good form of calcium carbonate. The things that will be digested will not make a good grit. In our grit we insist on mica or granite or something containing a large amount of silica. We prefer oyster shells or clam shells for a lime shell. I also give chickens an abundance of ground bone.

—Prof. Phillips.

Filaria in the Blood of Dogs

By Oscar Schreck, New Haven, Conn.

THERE are three kinds of parasites that gain access to the blood-vessels and thus mingle with the blood, namely, Filaria immitis, Spiroptera sanguinolenta, and the Strongylus vasorum.

The Filaria immitis is white in color, the male from four to six inches in length and the female eight to ten inches. The mouth is surrounded by papillae. The body tapers to its posterior extremity, which is supplied with eleven papillae on each side. This parasite is met with in the right heart, and larger blood-vessels of the dog, and has a wide distribution in the blood (embryos).

The parasite is of considerable interest. Filaria, whose embryos circulate in the blood, in all cases, require the intervention of some blood-sucking creature to assist in their distribution, as the mosquito, sand-fly, louse or flea. How the parasite passes from these blood-sucking creatures into the dog has not been altogether satisfactorily traced, but it has been proved by Grassi and Noe, no doubt, that the filaria of the dog is found in its larval condition in the flea, mosquitoes, etc.

Except in one or two favored localities every dog in the Fiji Islands falls a victim sooner or later to these filarieae, but it is somewhat strange that bitches resist them longer than the male dogs. I am of the opinion that the ova acquired by the fetus from the blood of a pregnant bitch may prosper and develop after birth of the pup. Filariae are also common among dogs of Ceylon. It is said that Filaria immitis exists in about one-half of the dogs in China.

The adult parasite lives in the heart of the dog, and numerous embryos are expelled by the matured females and taken up by the mosquitoes from the peripheral blood, and their life cycle continues. The embryos may be found in the peripheral circulation during the night and disappear into the deeper circulation during the day.

Pathology and symptomatology: The symptoms of filariasis, aside from the presence of the larvae in the blood, vary much in different animals, or I may say individual cases.

It is well known that infested animals with numerous larval filariae in their blood, may for years show no symptoms and be apparently in excellent health. The symptoms to which they would naturally give rise are either those of interference with the due performance of the cardiac function, marked nervousness, epileptiform convulsions, etc. A peculiar barking cough which ends in a sort of spasmodic hawking up of frothy mucous, with distressing dyspnea and syncope is also seen in some cases, followed later by vomiting, emaciation and anemia. The animal maintains his appetite at first but later the appetite dwindles and there is a cough, heart irritability, weak pulse, visible mucous membranes anemic, increased flow of urine, and in some cases paralysis, or a dropsical infiltration of the abdomen, and depending members, due in part to the feeble contraction of the heart, rendering it incapable of carrying on the circulation perfectly. These distressing symptoms do not usually manifest themselves in puppies of less than six months, though the baby filariae are easily detected in the blood.

Spiroptera Sanguinolenta

Synonym: Filaria sanguinolenta.

Male, one and one-half to two inches in length. Female one and one-half to three inches long, of reddish color. The body is attenuated at both extremities and the tail is somewhat curved. This parasite is found in the stomach and esophagus of the dog and frequently forms tumors in the walls of these organs. The cockroach orientalis is the intermediary bearer of this parasite.

The worm was first known only as found in the circulating blood, no recognition being made of the species. From the fact that these larvae were met with in the blood of infested animals, the name, Filaria sanguinolenta, was attached. But later, when the worm was recognized, it was found that the proper habitat of the worm in animals was in the lymph passages, usually one of the lymph vessels (large) of the thoracic duct, and bronchial lymph glands.

It is also found in the walls of the stomach and mucous membranes of the esophagus. The female generally gives birth to the larva in large numbers. These are carried along the lymph vessels by the current and eventually are poured into the blood vessels. The establishment of a positive diagnosis of filariasis is made by the discovery of these larvae in the blood of the animal examined. Strong

analogy exists in the similar establishment of the mode of transmission of the Filaria immitis of the dog by mosquitoes, etc.

Pathology and symptoms: The symptoms of filariasis in the dog aside from the presence of the larvae in the blood vary much in individual cases. It is known that infested animals with numerous larval filariae in their blood, may for years show no symptoms and be apparently in excellent health. In the very few cases seen and reported, it presented no special symptoms except rapid emaciation.

Strongylus Vasorum

Synonym: Hematozoon subulatum.

Is of rose color, male from 14 to 15 m.m. in length. Female 18 to 21 m.m. in length. The body is attenuated at both extremities. This parasite is found in the right heart and pulmonary vessels. They reach the minute vessels of the lungs by way of the circulation and form in some cases transparent nodules, which may be mistaken for tuberculosis nodules.

Their presence is difficult to recognize except by autopsy and at times the embryos. which measure from 70 to 80 micromillometers in length, may be found in the mucous from the animal's mouth during life.

Treatment: It is needless to enumerate all the remedies which have been employed in the treatment of filaria; nothing appears to have ever been really efficacious. Tonics may be needed in the anaemia which is apt to come on in the course of filariasis. Thymol has been lauded as almost a specific, but in many cases reported it has been apparently of no value. Such conditions must be met with individually and symptomatically.

Comment: An important lesion caused by the larval stage of the above parasites, omitted by the writer, is that of thrombosis or embolism, due to irritation and inflammation of the internal coats of the blood vessels infested quite frequently found in the colic artery.

Case Report

I was called to see a performing Dalmation, seven years old, weight about eighty pounds, and owned by an animal trainer, having a trained animal show at a local theatre. The owner stated that the animal appeared in perfect health, but was losing weight, and doing three shows a day till three days ago.

On examination I found the animal weak and somewhat dull, with a slightly staggering gait, and a slight dragging of the hind limbs, a sort of dragging the toes along on the floor. Conjunctiva and other visible membranes anemic, with labored breathing. Appetite good, up to the day I was called; posterior limbs down to the hock joints were infiltrated, and would pit on pressure. Pulse irregular and somewhat intermittent, temperature 102.2°; valvular insufficiency was suspected and owner so informed. As the animal was constipated, I gave a mild purge; this the owner wished me to do, as he seemed to think the trouble was constipation and nothing else, but he could get no results from his own treatment of the case. I was to return on the following morning to the theatre, and at the same time look at another dog. During the afternoon I was again called (3 p. m.) and found the animal out in back of the theatre, with the caretaker, as the owner was at this time doing his trained animal act. The animal showed symptoms of abdominal pain, and unable to get on his feet, and when raised would at once fall over on his side. During this seizure, the animal retained consciousness perfectly; but during this period the visible membranes were of a chalky color, the features contracted as in great pain, and the body was cold.

I gave a hypodermic injection of morphine for the pain, which kept the animal quiet till

This is John W. Scott of Philadelphia exhibiting his imported Airedale that recovered from a fractured spine under the treatment of Dr. H. B. Balthaser of that city. The unique treatment was described in the July issue.

six p. m. when the same symptoms reappeared. I repeated the morphine, but the animal died that evening.

Autopsy: Abdominal cavity contained nearly one quart of serous exudate. All organs normal, anti-mortem clot in right auricle extending into valve. On removing clot, eight long worms were found. They measured six, seven, and ten inches. Body of the worms tapered to its posterior extremity, and was supplied with papilla on each side. Pronounced the same as Filaria immitis. This dog was raised and trained in South America and had been traveling from city to city for over a year.

CANINE DISTEMPER

I have been having an outbreak of infectious condition of puppies here that seems to be different from anything I have ever seen before.

It occurs in puppies from two to four months of age or older. The symptoms are: Loss of appetite, temperature 104° to 105° F., and slight discharge from the eyes. The respiration varying in the same patient, at times very rapid and labored and at other times apparently normal. There is extreme weakness in most cases, with a great thirst; they will lap water constantly if allowed to. The mortality high, in fact I have not seen any recover. They die in from a few days to a week.

The autopsy showed a very pronounced hemorrhagic condition throughout. The lungs in different stages of congestion, with surface covered with irregular petechiae, heart enlarged and flabby, liver enlarged, engorged and friable, intestines show hemorrhagic spots of varied sizes externally and petechiae on the mucous coat, kidneys and bladder.

They do not respond to any kind of treatment and all die in spite of anything I have been able to do.

Kindly advise me as to the diagnosis, prophylaxis and treatment—H. M. H., Ind.

Reply: You are dealing with a very virulent form of distemper. At least, it is quite customary to diagnose such conditions under this blanket term.

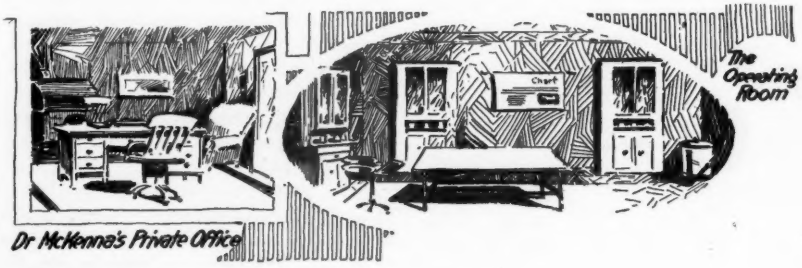
The mortality you describe is by no means exceptional as we are constantly in contact with outbreaks that kill 100%.

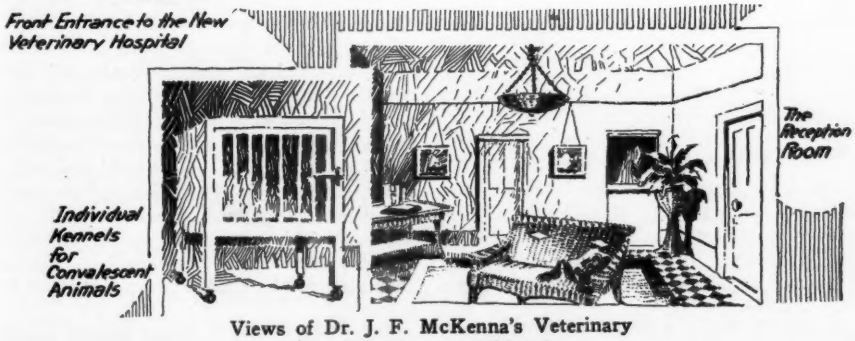
The standard system of handling such outbreaks is that of immunizing exposed animals with serum, using 20 to 30 cubic centimeters of serum at intervals of 48 to 72 hours, until three doses have been given. The sick animals receive the same dose at intervals of 18 to 24 hours.

The best prescription we have yet used for canine distemper is one recently advised by Dr. Brumley consisting of iodin, 1/25 grain; creosote, ¼ grain, potassium dichromate, 1/20 grain. This is given every six to ten hours and the dosage prorated according to the size of the dog. A very small dog would take only ½ this dose and a very large one might take three times as much. Give them nothing but cod liver oil as nourishment during the acute stage.

CANINE PLUTOCRAT GETS A GOLD CROWN

Dr. Jobson of Grays Inn Road, England, makes a specialty of canine dentristry and is caught by the camera setting a gold crown for a bull-terrier.





Views of Dr. J. F. McKenna's Veterinary Hospital, Fresno, California

Small Animal Practice*

O. V. Brumley, Columbus, Ohio

Professor Small Animal Practice, Ohio State University

TWENTY-FIVE years ago when it was my privilege to become associated with the veterinary profession, practice was confined principally to large animals and the horse was the animal that received the most of our attention. Cattle practice was of minor importance and rarely were the other animals considered. Since that time the practice of Veterinary Medicine has been modified to a great extent so that instead of the veterinarian restricting himself to caring for the various diseases of large animals we find him paying more attention to some of the other animals, especially dogs, cats and the various breeds of poultry. This means to us as veterinarians that there is a growing demand for our services in taking care of practically all classes of animals, and as a result of this, we must look the situation squarely in the face and prepare ourselves for such an emergency. This change in our professional activities has taken place more or less gradually until the past few years. During this latter period several things have occurred to bring about a more rapid change. The automobiles and automobile trucks have reduced practice to a certain extent upon certain classes of animals.

This is especially true in the larger cities, where horses were used exclusively for local transportation, deliveries, pleasure, etc. However, in spite of this change, my prediction is, we will find veterinary practice better in the near future than it ever has been in the history of the profession. It is generally known that all professions and business have just gone through a period of depression and reconstruction with a much brighter outlook just around the corner. In support of this optimistic statement we feel safe in saying there are several factors contributing to make it a reality in the near future.

Several Agencies Make Outlook Hopeful

In the first place, progressive, live veterinarians, who are trying to elevate the profession from every angle; the public has begun to realize that the men of our profession can be educated, trained for service, and are equally as efficient in our profession as the physician is in his. We are all glad to see this change wrought, and no doubt but that all of us can look forward to the future and see better service, better appreciation of service and a more hopeful outlook all around, because the veterinarian himself is willing to do something to get out of the rut.

In the second place the value of live stock, now low, will increase during the next few years, even the price of good horses will keep pace fairly well with other animals, so that from an economic and business standpoint the owners realize the necessity of expert advice and treatment for animals when sick. This is especially true with all meat producing and pet animals, and isn't it true that our calls are becoming more frequent in caring for these animals than formerly?

In the third place the education of the laity. Just to what degree this has been a benefit to the veterinarians is somewhat problematical, but we all must admit that the extension of the telephone, rural delivery of mail, the electric lines, better roads, have been a great uplift to the rural communities, and consequently given these people a much broader view of things, and have materially increased their respect for the advice and professional services of the veterinarian. We will also admit that there is still chance for improvement along this line, and we hope to see the day that the laity will refuse to have anything to do with the uneducated, unprofessional man. Education of the public to the importance of expert service is in our opinion of the greatest value to the profession, and we are all happy to see progression along this line. We believe education is the basis of all development.

In the fourth place, people are becoming more attached to small animals and consequently there is a great increase in the number of animals kept simply for pleasure. Several years ago veterinarians were hardly ever called upon to treat this class of patients, but at present we find a large share of the practice in cities made up of so-called small animal practice. This practice is very remunerative, and am pleased to note that it is gradually extending to the smaller cities and rural communities.

What constitutes a small animal practice?

* Address delivered at the University of Minnesota Short Course for Veterinarians July 14, 1922.

There seems to be a division from a professional standpoint and perhaps it is the beginning of specialization in veterinary medicine. We should include all the small domestic animals, particularly dogs, cats and birds (including all breeds of poultry). In the cities perhaps dogs and cats represent the majority of cases while in rural communities poultry would predominate. We do not wish to go on record as advising specialization in small animal practice so much as taking advantage of our local conditions and take care of all classes of patients. To those who are interested in small animals it offers an excellent field for study, development and is very remunerative.

In this connection we wish to call your attention to the great possibilities for giving advice and for practice in the poultry industry. The veterinarian must accept the newer conditions and adapt himself to them in every way.

Income Can Be Doubled

We sincerely believe our annual income can be doubled in a short time by taking advantage of all the possibilities in our respective communities. All communities have small animals.

It would seem that the veterinarian in his particular locality should make a survey of all the animals in order to find out the number, species, and the possibilities from a professional and business standpoint. This survey would give us some valuable information and would determine whether or not we were doing our share of professional work and also what the possibilities would be for future development. Personally, we believe there is much that can be done in treating this class of patients in practically every community in the country. The poultryman has been inclined to take his disease problems to the county agents mainly because he can get a sympathetic hearing from them. A prominent poultry expert from another state informed me that he had been devoting a great deal of his time consulting with people along the lines of diseases of poultry and he was surprised to know from them their local veterinarian did not take any particular interest in their problems.

It would seem that unless we devote more time and attention to this phase of veterinary practice more of it will be done by those employed to do other lines of work. This work should be kept in the profession.

Poultry Industry Offers Great Prospects

Most people do not realize the importance of the poultry industry in their respective community, county or state. An individual fowl might not amount to very much considered by itself but when we realize that practically every farm in the community has a flock from 50 to 1000 fowls on it, in the aggregate in each community, county or state, it represents a large and growing industry.

Now from the veterinarian's standpoint it would seem that we should take a greater interest in and make a study of this industry in our respective communities in several ways.

In the first place, a study of the industry from the standpoint of breeds and breeding would be of considerable importance so that your advice would be in demand in assisting your patrons with their problems along this line. The question of breeding of fowls is just as important as other animals on the farm.

In order to improve the industry better individuals must be selected and eggs obtained from those known to be high producers of this article, or the fowls themselves for market, in case of market breeds.

In the second place, the selection of layers or culling of flocks should be considered. There is no reason why the veterinarian should not take care of this work. Bulletins can be obtained which explain fully this operation, and with a little experience there should be no difficulty in carrying it out successfully. When you are on the farm looking after the other livestock, this question could be brought up and discussed with the owner. It is very largely a matter of suggestion and education.

In the third place, hygiene and sanitation as applied to flocks of birds should be considered. The principles are the same as applied to other conditions, but the owners should be advised relative to the proper housing of birds, the probable number for each house, window and air space, sunlight, etc., all of which are important in keeping the flocks in a healthy condition. They will need advice also in regard to proper methods of disinfection, etc.

In the fourth place, a study of the various diseases of fowls is particularly important at this time. As has been stated on previous occasions the diseases represent the real difficulty to successful poultry husbandry.

Depends on Our Own Ambitions

It is surprising how rapidly these things

develop when they are taken seriously and we devote our time and energy to them. You will find the county agricultural agents willing to cooperate on all these problems. Our experience has shown that if we take responsibility and assume the right attitude there will be no difficulty in securing hearty cooperation with the state and federal agents in our communities so that mutual benefit will result.

You will please pardon these general remarks, on the ground that we wanted to impress upon you the importance of considering veterinary practice in a broader sense than what it was formerly thought to be, and that small animals are going to be more valuable to us in our professional work than they have been in the past, depending, of course, upon the interest we care to take in them and how successful we are in treating them.

The Equipment for a Small Animal Practice

Certain equipment is considered essential in small animal practice. We would recommend first of all a clean, well equipped office and if possible a waiting room similar to those used by physicians. This should be provided with comfortable, neat furniture, well lighted and ventilated. In other words, a pleasant place for our patrons to wait in. Pleasing pictures with up to date literature will add a great deal to keep up the tone of the office and the morale of those waiting. Current veterinary and agricultural literature should be well represented. Keep office orderly and clean.

Instruments

Secondly, sufficient instruments and in proper order with some adequate way of sterilization. We think an ordinary copper boiler of small size would answer the purpose. Be sure that all instruments are thoroughly sterilized before using. An elaborate outlay of instruments is not necessary.

Cages

Thirdly, provision should be made for a few, clean, well lighted and ventilated cages. These should consist of an isolation cage or cages to take care of infectious cases. A few cages to house the regular patients. All of these cages should be kept clean at all times and painted occasionally. The painting will clean and disinfect them.

Microscopes, Etc.

Generous use of some reliable disinfectant is also recommended. Three per cent liquor cresolis compositus. Hot water.

Lastly, we do not believe it possible to do satisfactory work in small animal practice without certain diagnostic instruments. A microscope, phonendescope, etc., should be available at all times. They should be in use every day in a small animal practice.

Importance of Diagnosis

This is the most difficult thing in small animal practice. It is the keynote to successful treatment.

A careful, thorough examination should be made in all cases in order to establish, if possible, a definite and accurate diagnosis. We are inclined to be rather lax in making our examinations and apply treatment before definite conclusions are arrived at.

In small animals especially, there are many diseases and conditions which are rather obscure and unless we are very careful, mistakes will occur, which may lead to the application of wrong treatment, or unsatisfactory results. This is discouraging to practitioner and owner.

At any rate unless the examination is made thoroughly and a definite diagnosis is made, it is impossible to give a correct prognosis and apply rational treatment. The diagnosis cannot always be established even after the most thorough examination.

Feeding Small Animals

The feeding of small animals is very important, and we should make a careful study of the subject. In many conditions dieting is one of the most important things to be considered in the treatment. Many small animals suffer from too much food rather than an insufficient amount. Large number of cases need only restricting diet for several days. On the other hand, nourishing and concentrated foods are required in animals recuperating from many diseases. Eggs, beef extract, salmon, lean meat, mush, oatmeal and milk constitute the common foods for weak and undernourished animals. The ordinary dog biscuit as sold on the market can be used as the regular food, and varied with other foods as the case demands. Our experience has shown that indiscriminate use of table scraps, trimmings from meat, left over from restaurants, etc., is often dangerous on account of preformed toxins, infection, foreign substances such as glass, etc., which may produce serious results.

Dieting and selection of foods for our small patients is just as important as medication. Very sick dogs and cats require special care regarding foods. Often they will eat certain

things and refuse others. This must be determined and a diet fixed accordingly.

Mix the Diet

The diet should be a mixed one in which all the essential food stuffs are duly represented. Meat may occasionally, under exceptional circumstances, be safely and wisely given as the exclusive diet; usually it can be allowed only in limited quantity, but in no case must it be permanently withheld. Vegetables are to be regarded as correctives rather than as foods. Of all the cereals, wheat ground moderately fine and used to make bread, biscuits and porridge is the best. Oatmeal and cornmeal answer a good purpose, especially in winter. Milk is useful, but not in large quantities at a time, nor continuously. Bones under due precautions serve an excellent purpose. Some of the patent foods are also good.

Variety the Idea in Feeding

Whatever foods be employed, variety is of the utmost importance. The less exercise a dog gets, and the more unfavorable his surroundings, the greater the care necessary in regard to food in all except its nutritive qualities. With the hard worked animal, the latter is of the greatest moment.

Quantity More Important Than the Interval

The actual quantity consumed within a given period is of more consequence than the intervals at which food is given. As a rule, twice in twenty-four hours will be quite sufficient, with many exceptions in favor of one daily meal.

In all matters relating to feeding, the circumstances under which the animal lives, and its individual peculiarities, must be carefully considered.

Cats, when given the freedom of the kitchen and the table scraps require very little attention in regard to feeding, especially if they have plenty of exercise. However, when they are kept in closer confinement, more attention must be given their diet. Milk is not only the traditional diet of the cat, but also forms one of the principal articles of food for it. The milk should be perfectly fresh, as sour milk is apt to produce digestive troubles, especially diarrhea.

Specially prepared foods are being sold on the market which seem to be very satisfactory. Small enamel pans are preferred for giving the food in, because they can be sterilized easily by placing them in a large pan or bucket with water and kept at the boiling point for 15 to 20 minutes. We have found it to be absolutely necessary to religiously clean and sterilize all feed pans to avoid serious conditions in these animals.

A study should be made of the feeding of our patients. Many times it is necessary to change the food often and to tempt them with choice bits of meat or other food. Feeding of the sick animals is a very important adjunct to the regular treatment.

CANINE DISTEMPER

In considering the diseases of small animals, it is somewhat difficult as there are a great many of primary importance. However, I believe that Canine Distemper with its complications stands out as one causing the practitioner the most difficulties. Therefore, with your permission will state some facts as far as possible concerning this disease.

During the past years we have been very much interested in canine distemper for a number of reasons. It is one of the most difficult diseases to handle from a number of standpoints.

Mortality High

First, the mortality of the disease is quite high, therefore, many times discouraging both from the standpoint of the owner and the veterinarian. We have had the experience of mild cases, even after the most carful treatment and nursing, rapidly grow worse and succumb to the disease while on the other hand many severe cases will rapidly recover.

This keeps us in doubt relative to the outcome of all cases and makes the prognosis difficult.

Diagnosis Not Easy

Secondly, the diagnosis is often in doubt. The disease in its early inception is difficult to recognize on account of the many forms it assumes. The fact that the early indications might be symptoms emanating from the nervous system, the digestive tract, respiratory tract, skin or some other portion of the animal's body makes the diagnosis difficult in many cases and may be overlooked until more general or prominent symptoms develop.

Distemper is an acute, infectious, communicable disease which in most cases affects young dogs.

Most Common Disease of Dogs

This is one of the most common diseases affecting dogs and is known in every country where dogs are found. It is particularly a

disease of young animals, the majority of dogs contracting it at some time during the first year of their lives. Whole litters of puppies, or all the animals in a kennel may become affected at one time. It occurs in districts as an enzootic. In cities it is more prevalent than in the open country. The season of the year has some influence on its prevalency and distribution, the fall and winter months being most productive of the disease. Highly bred animals are more commonly affected than those bred by natural selection.

Etiology in Dispute

There seems to be considerable difference of opinion in regard to the exact etiology of dog distemper. Some claim it to be produced by a specific microorganism (Bronchosepticus canis), while others think it is due to a filtrable virus. In each case evidence has been produced which seems to substantiate the claim made. Two distinctive factors are recognized from a clinical standpoint: (a) A primary infectious agent which produces the marked initial symptoms of the disease. (b) Secondary organisms which produce many varied and serious complicating conditions. A large number of organisms have been isolated from animals affected with distemper, but so far they have proved to be simply secondary invaders.

Infection May Be Indirect

Natural infection takes place in several ways. It may be either direct or indirect, the animals coming into immediate contact with each other, or through intermediary agents, the virus being taken into the digestive tract with the food or drink. There are a number of factors which tend to favor the development of the virus, such as influence of any kind which reduces the general resistance of the animal, in the way of poor food, insufficient food, colds, etc., or various diseased conditions interfering with the assimilation of food. Puppies with weak constitutions are especially susceptible. The development of the disease is ordinarily in animals from three months to one year of age.

Old Dogs More Resistant Than the Young

Older animals are very seldom affected and if so take the disease in a mild form.

This may be explained by the immunity the dog possesses or by having had the disease in a mild form. House dogs which have been pampered and petted, or those of the finer breeds are more susceptible, and usually take distemper in a more severe form.

It has been determined quite conclusively that the specific virus produces an acute or peracute condition with a high temperature followed in a few days by a secondary change due to other bacteria resulting in various complications, such as occur in the skin (pustules), respiratory passages, digestive tract, nervous system, etc.

Symptoms

There is quite a variation in the symptomatology depending upon the form which the disease takes. The most prominent manifestations are those of an infectious catarrh, involving the membranes of the eye, the respiratory and digestive systems. The catarrhal symptoms are often complicated with those of severe disturbance of the brain and cord, pustular eruptions on the skin, and very frequently bronchopneumonia. For clearness in the description of the symptoms it is best to consider them under the following headings, depending upon the part affected:

1. The period of incubation is usually from three to five days. This period will vary considerably, depending upon various factors.

Some few cases have been known to develop the disease in two to three days, while in others it required two to three weeks. The peracute type of distemper is ushered in by marked constitutional disturbances, such as great depression, fatigue, total loss of appetite, a very high temperature (106°-107° F.) which in the course of several hours drops to normal, and later to sub-normal. This form of the disease takes a very rapid course, the animal soon passing into a comatose state.

2. In a large number of cases conjunctivitis is a prominent symptom. The discharge from the eyes is at first serous changing in a short time to thick mucus or white or yellowish pus. Involvement of the cornea and other structures of the eye take place in many cases. The entire eye or eyes may be destroyed.

3. Vomiting is an early symptom in a large number of cases. The vomitus consisting of mucus, particles of food, bile, etc. Rather rapid involvement of the digestive apparatus takes place until in many cases we find a marked gastro-enteritis. The discharges have a characteristic odor.

Concluded Next Issue

Queries and Answers

DIFFUSED CHRONIC MASTITIS

I would like suggestions on the following case. I was called one evening to see a large Holstein cow that had calved that morning. The udder was greatly enlarged and caked. On trying to pass a four-inch milk tube, I came in contact with a firm substance in the milk cistern, and not in the teats. All four quarters were alike. I could not get a drop of milk from any of the teats.

This cow, one year ago, when fresh, had a quantity of pus milked from the udder, and then went dry in a short time.

My diagnosis at that time was interstitial mastitis. A fibrous tissue had entirely closed the openings to the teats. Was my diagnosis correct?

What would you recommend in the way of treatment? Would amputation of the udder be the proper procedure in a case of this kind? —C. J. C., Nebr.

Reply: Your conclusion is probably correct. On account of the previous attack of mastitis the function of the mammae is practically suspended.

There is no help for such a case. Such an animal should be fattened for the butcher since any treatment that would effect a partial cure would still leave her unprofitable as a milk producer.

LIFE CYCLE OF THE WARBLE-FLY—CATTLE GRUBS

What is the life cycle of the grub found under the skin of bovines in the spring? Some claim it is taken into the alimentary canal and then passes through the tissues to the skin of the back while others claim the black grub fly deposits the egg when they bite the cattle during the summer.—C. J. H., Iowa.

Reply: Warbles of cattle were once thought to localize in the skin of the back from the esophagus where the larvae developed after the eggs were swallowed, but this has been shown to be erroneous. It is now known that the eggs hatch at the place deposited and that the larvae penetrate into the subcutaneous connective tissue by the way of the hair follicle and then travel to the submucous space of the esophagus and back again to the place where the grub is found. The eggs are laid during June or July, hatch in five to seven days, reach the esophagus in three to four months and then are found fully developed grubs along the back during the month of January or February. The latest literature on the subject is by Shannon, Cornell Veterinarian, July, 1922.

POST PARTURIENT ATROPHY IN A MARE

The subject about which I desire information is a 1400 pound Clydesdale mare that foaled two weeks over-due. The delivery was delayed on account of the mare becoming cast crosswise in the stall. The delivery was blocked for hours by the partition with the fetus only two-thirds extruded, and was only effected after the mare's body had been straightened out in the stall. She stood up thirty minutes after delivery, staggering but otherwise well. This was April 15th. At this writing (July 14th) the superficial gluteus, the biceps femoris and the semimembranosis are badly atrophied and the leg at the level of the gastrocnemius is two inches smaller in circumference than the opposite side.

The mare is not exactly lame but shows weakness and a faltering gait. When I last saw her she was working in a potato scuffler which the owner said was the first work she had done.

Is this a spinal trouble or simply muscular atrophy from the straining? What is the best treatment and the prognosis?—H. R. M., Man.

Reply: The case you describe is a very interesting one but not entirely unusual. The trouble always follows a delayed delivery and is due to severe bruising of the nerves of the lumbo-sacral plexus, which supply the muscles involved. The recovery of this mare will depend entirely upon the amount of damage the nerves have sustained and will in no way be dependent upon any treatment that can be administered either locally or internally.

They usually recover from five to six months

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T. H. Ferguson, Lake Geneva, Wisconsin; Bovine Medicine and Surgery
J. T. Flynn, Kansas City, Missouri; Diseases and Surgery of Small Animals

For Information Address, W. B. Craig, Dean

Indiana Veterinary College Indianapolis, Indiana

but when some of the nerves have been damaged beyond repair it is possible that some of the atrophy may be permanent.

The management of this mare should be that of careful but continuous exercise and the feeding program should be one that will keep up a good state of health. For the sake of doing something in a medicinal way, nothing would be better than nux vomica or strychnin.

CEREBRAL FORM OF HEMORRHAGIC SEPTICEMA

I am describing a case I diagnosed as "cerebral form" of hemorrhagic septicemia. As we do not have much septicemia here I would like to know if I am right.

The subject is a seven months old Hereford calf that was kept in a dark and slightly damp stall day and night with two other calves which died two days previous to the death of this one; all showing the same symptoms.

These calves have never received any feed except milk and a little meal and hulls left by the cows.

Temperature: 103, breathing about normal, pulse about 70, bowels normal in color and movements, urine normal in color and appearance, clamping of jaws, frothing at mouth, blindness and falling over feed-troughs and other objects. Death occurs in forty-eight hours after symptoms are noticed, postmortem lesions: hemorrhagic spots the size of a pin head to a small button are found on the heart and around the chordae tendinae; rupture of capillaries of the mucous membrane of the intestines and bladder. The spleen and kidneys seemed normal. The blood looked normal but would not coagulate very readily if at all. I did not examine the brain. As client skinned one of these calves and had several scratches on his hand, I would like to know if there is danger of infection. If so state symptoms and treatment for man as doctors here know nothing about it. Also would like to know if there could be any danger in peeling peaches with the knife used in skinning the animal, after the knife had been boiled.

Reply: Your diagnosis of hemorrhagic septicemia is as good a guess as any from a clinical standpoint. The danger of using the knife is entirely removed by boiling for twenty minutes. The disease does not affect humans.

The thyroid and superenal glands are said to be of considerable importance in metabolism.

INJURED BULL

Last spring I bought a registered bull calf in Illinois, and had him shipped to me. On arrival he was so stiff he could hardly get out of the crate. Most of the stiffness seemed to be in his front legs. His knees were a little swollen and he "toed" outward with his front feet. I thought it was stiffness from shipping.

I kept him staked out for a while near my place, but in a few weeks sent him to pasture. He seemed to improve the first few weeks, but when the flies became bad and the pasture short, the stiffness accentuated. During the past few weeks we have had plenty of rain and cool weather which seem to be helpful to him.

What would you advise? I have a fenced lot that I could keep him in near my hospital and could attend and grain him every day. Or do you think it would be better to just let him run on this pasture?

Please give me detailed directions as to just what you would do with him if he were yours. He will be one year old September 21, 1922.—H. C. G., Okla.

Reply: We believe the bull did sustain injury while shipping, and that the trouble he is having may be traced to that cause.

A good physical examination of his legs, if he is reasonably quiet, should enable you to locate the seat of the trouble.

We have no doubt, in view of his age and general health, that he will improve as he grows older. He should be given a good balanced ration, including plenty of minerals to help build up his skeleton.

LAME PACER

I am writing you in regard to a pacing horse which I have had under treatment. This horse became lame sometime in March. When I first saw him he had an enlargement of the synovial sack on the outside of the hock, with some fever in it. I first prescribed your anodyne liniment with very little relief. Then used M. A. C. Last I used iodix; now they are using patent medicine, "Save the horse," but he still hitches in that leg. Seems to go better after they warm him up and will jog five miles in good shape. The enlargement is about the size of my fist and soft. It is outside and extending around in front of hock.

Is there anything you could advise in this case? Would like to get him in trim for the fall races.—L. S. L., Ohio.

Reply: I would suggest that all effort to get him up to racing form this fall should be abandoned. It is not very long from now until the fall months and as such injuries as you describe are sure to become worse under severe training and racing, it is very seldom that a veterinarian gets very much credit for trying to keep such a horse going by palliative treatment.

It seems to me it would be better to advise your client to let you give this abnormal region a little sensible puncture-firing as soon as all of the irritation from previous blistering has disappeared, and then give the animal at least six weeks of absolute rest. At the end of that time, I am quite sure that there will not be any return of lameness unless my estimate of the lesion you describe is incorrect.

This will, of course, bring your period of convalescence to the first of August, which would give you mighty little time for preparing a horse, let down so completely, for the fall races.

POTASSIUM PERMANGANATE IN NECROTIC ENTERITIS

In the treatment of necrotic enteritis I have the best results with potassium permanganate, 64 grains to the pint and then use two ounces of the solution to every 25 gallons of swill. I would like, however, to know if the dose could be increased with safety.

Reply. The dose of potassium permanganate for a hog is from one to two grains according to the size. They should be able to take this amount twice a day. Your mixture allows only eight grains to every 25 gallons of slop which means that there is only one medicinal dose of two grains to every four and a fourth gallons. A hog will of course consume that much slop in a day, but it is not advisable to mix such an unstaple compound as potassium permanganate with organic matter except for immediate use.

Mayor Kiel, of St. Louis, announced the removal of the humane society from the control of the dog pound in St. Louis because the humane society declined to deliver impounded dogs to the medical schools where they were to be used for scientific purposes. The humane society filed suit, attempting to restrain the city officials from disposing of impounded dogs to medical institutions.

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PSEUDO-RABIES IN DOGS

There is an unknown disease in this section, that is attacking dogs and I am writing to ask if you can tell me what it is and what remedy to use.

The dogs affected seem all right until the attack comes on, and between attacks nothing wrong can be detected. They seem to be terribly frightened and in great pain. They bark, yelp as if in pain, and try to seek cover under buildings. The attack lasts only a short while and may recur in an hour or two or after a lapse of twenty-four hours. Some dogs have left home when one of these attacks was on and did not return for two or three days, when they came back apparently all right. None of them have attacked any other animal or any person and all have recovered without any treatment.

If you can tell me anything about this from this description, please let me have an early reply.—W. M. N., N. C.

Reply: A disease similar to that which you mention sometimes occurs in dogs from intestinal parasites and has been described under the name of pseudo-rabies. A similar state is also caused by teething and is described by some authors as "dental rabies." A good worming out will generally cure the former, while the latter get well without treatment.

THUMPS IN HORSES

I am desirous of obtaining some information regarding a condition I frequently meet in this country among horses, and on which I can find very little literature, viz., "Spasms of the Diaphragm" or "Thumps," as it is commonly termed.

Last summer I had occasion to treat quite a number of horses during the hot weather for spasms of the diaphragm, and all responded nicely to treatment. The particular case I have in mind and one which I need some light is a black driving horse, weighing about 1,100 pounds, and 8 years of age. On March 12, 1921, this horse was brought to the hospital following a severe drive, being nearly exhausted, stumbling at every step and just barely able to travel. Pulse was very weak, respiration labored, mucous membranes highly injected, temperature 101, and thumping severely. The animal responded nicely to treatment and left the hospital in three days.

On the 11th instant [February 11, 1922] the owner called me to his farm to see the same horse for the same condition. I found the mucous membranes highly injected, pulse weak, respiration labored, temperature 101.5, but no thumping. However, he stated that the horse had been thumping the night previous, and in the morning. I also learned that the horse had a light attack about two months ago, and also one about two years ago. As the owner has been feeding a rather heavy corn ration with little hay I attributed this attack to indigestion and advised a complete change of feed.

I would like to know if once an animal has thumps, recurrence of the condition is common, causes, immediate and subsequent treatment, especially in the way of treatment how to handle the above described case.

In the way of treatment I have used camphorated oil intramuscularly, atropin sulphate, lobelin sulphate followed with tonics. I have also used chloral hydrate per orum. I believe I get best results from camphor. I have not tried morphin.

I might also state further that I have observed several cases showing symptoms very similar to tetanus, i. e., nervousness, muscular twitching, jaws locked, stiffness in movement, and in some apparently blindness.

Any information you might give me on this subject will be greatly appreciated.—H. A. B., Louisiana.

Reply: Thumps in horses is always due to something that overwhelms the vital forces. It is most commonly caused by feeding horses too much concentrated food and too little roughage and particularly when subjecting them to violent exercise with a full stomach.

It is also a fact that a horse once affected with this trouble is more susceptible to it again, because most of them have a dilation of the stomach.

The best treatment for this trouble to be atropin. The cases you describe as having shown nervous symptoms are undoubtedly due to a toxemia emanating from the undigested contents and would call for good active purgation.

Severe paratyphoid infection in infants may be manifested by tetanic spasms. A similiar condition has been observed in pigs that were infected with the paratyphoid bacilli.

A fatal bacillary dysentery in lambs exists in some sections of the British Isles. The causative factor is a bacillus probably belonging to the colon group. The losses due to this disease varies from 5 to 30%. Lambs from 1 to 14 days of age are most susceptible.

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RESPIRATORY STENOSIS IN A HERD OF COWS

Will you please give me your advice on the following condition which I find to be existing in a client's herd of cattle: A 3-year-old jersey heifer with a severe rhinitis, indicated by difficulty in respiration which seems to be due to a thickening of the nasal mucous membrane, and by the discharge that is constantly coming from her nose in varying amounts, and differing at time as to character, but in the present stage a sero-purulent with a slight admixture of blood. There is also a serious discharge from the eyes which in other respects seem normal. She shows no constitutional affects now, and is giving a good flow of milk. The farmer informs me that she was much worse a few weeks ago, even so bad she could hardly travel with the rest of the cows, being unable to breathe through the nose at all, and losing very rapidly in flesh. The improvement seems to be due to her having been taken from the pasture and kept in the stable. This animal was similarly but not quite so badly affected last summer, but apparently became normal when put in winter quarters.

There are two other animals in this same herd now beginning to show these symptoms but in the less severe form—one a two, and the other a four-year-old.

The owner of these cattle bought a bunch of heifers about seven years ago, and one of them had this same difficulty in breathing when he got them. Is there any connection—what is the probable cause, and line of treatment you would advise? —C. F. B., Pa.

Reply:—We are unable to make a positive diagnosis of the cases you describe but offer the following suggestion on your future examination of them. Respiratory stenosis occurs in bovine from the following causes.

1. Pus collections in the sinuses from dental troubles or from dehorning.

2. Tuberculosis or other infections affecting the retropharyngeal glands.

3. Pulmonary parasites invading the sinuses and nasal fossae.

4. Actinomycosis or other growths, and traumatisms of the nasal septum or alar cartilages.

It would be advisable to first test these animals for tuberculosis before making any investigation as to the other causes, and then submit the throat and nasal fossae to a thorough physical examination.

CULLING HENS

I would like to know something in a general way about the culling of hens. Our county adviser does this kind of work here and I think it by right should be the work of the veterinarian.—J. M. K., Ohio.

Reply: County advisers instruct farmers in culling their hens and in this connection are doing mighty good work. Why not attend his demonstrations. We know of no better way of answering your query than by quoting word for word and article in Hoard's Dairyman entitled "The 'how' of Culling," by J. B. Hayes.

"The safety in culling lies in the fact that each hen in the flock has been kept under the same conditions of feed and care. One can naturally conclude that the best will still come highest to one's expectations regardless of what that management may have been. This statement may refute some of the arguments that have been raised against culling practices. If it takes knocks to make a system successful, culling has proved its worth.

Possibly two points should be considered in connection with every flock. The first is the age. Age does have an effect upon production in that under most conditions a fowl will produce the largest number of eggs during the pullet or first laying year. A very commendable method is to accept the practice of banding all pullets in the fall with either colored bands, with numbered bands or marking with a toe punch, so that hens will be kept just two years. Cull in the fall and keep the best ones over for the second year for breeding purposes. Too many old hens that have outlived their usefulness compose many farm flocks. A system of marking will eliminate this possibility.

Poultry should also be considered as a growing crop with a definite growing season. Early hatching means early development and the production of high priced eggs.

To simplify the entire method only four points will be considered. These four are fundamental and must be used together as the indication of a hen's production. This is especially true in the consideration of just fair producers.

1. A hen's head indicates health and vigor which means production. Eliminate all hens with long snaky heads, with poorly developed combs and sunken eyes. The other extreme, of course, beefy, masculine heads also with sunken eyes is not desired. Too much of their feed goes toward the production of meat. The producers have neat heads, with no surplus of accumulated fat around the eyes or face and prominent eyes. One should look from the back of the head and see the eyes standing out prominently like shoe-buttons. When we find this vigorous, alert appearance in the head we find a producer.

2. Pigmentation or loss of color from the eye, beak and legs. This test eliminates any of the white skinned fowl with white, blue, or black shanks. It applies to all others.

We will notice in chicks that these three sections are rich yellow in color. When the pullets start producing the color fades. The first noticeable point is the eyelid. It will then fade from the beak outward from the head and finally from the legs. When we find this faded appearance with the type of head described it means a long time producer.

The color will return in broody hens. We can in this way determine how long the hen has produced and what length of vacation she took. If the hens showing signs of broodiness are collected each night when eggs are collected and placed in a slat bottomed coop, more eggs can be obtained. It is also well to band them on each visit to the broody coop and those showing a large collection of bands can be sold. They spend too much time on vacation.

3. Moulting. A hen changes clothes when through work. If one decides to moult during July or early in August she has given a short laying season and a low record. The early moulting hen, aside from a short season, is generally a slow moulter and loses times in this way. A hen moulting in September, October, or early November has produced over a long season, moults quickly, and seems to concentrate on all that she does. It is ordinarily not advisable to retain a hen in the flock that moults before August or September and to keep all those moulting rapidly in September, October and November. Particular emphasis should be placed on the rapidity of the late moult, for a hen may be so depleted physically by the heavy production that she may not be worth consideration for the following year.

4. Capacity. Along the underline of every fowl is a bone called the keel. On either side of the vent are two others called the pelvic bones. As an indication of capacity measure the finger width from the keel to the pelvic

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bones by placing the hand flat in this space. Poor producers are limited in this section to the width of two or less fingers' width.

The pelvic bones should be thin, straight, and pliable. Poor producers generally have thick bones, greatly curved inward or are not pliable. This test might be comparable to the thickness of the skin on a cow.

Present laying condition is indicated by distance between the two pelvic bones. If the abdomen is soft and pliable and there is room for two or more fingers between the pelvic bones, the hen is at that time in laying condition.

Consider the four points in judging every hen. The very best are easily spotted but it takes some study and practice to correctly judge the in-between bunch that is on the fence between keeping and selling."

—J. B. Hayes, Hoard's Dairyman.

VOLAR FLEXION IN CALVES

Please advise me about the diagnosis of two calves. They are unhealthy in every way, and of bad appearance. They seem to be crippled all over. They do not get up well and stand on the toes of hind feet with lower joints flexed. They are about two months old and are growing worse. No fever. They have had discharge from the eyes. It seems like rheumatism.

Please tell me what to do for them.—A. T. Q., Tex.

Reply: Your diagnosis of rheumatism is not bad. The treatment should be good care, a balanced ration and the administration of medicinal doses of sodium salicylate.

It sometimes happens that young animals affected with this disease become so badly deformed that it is necessary to straighten their legs by performing tenotomy, but in the case of ordinary cheap calves such an operation is hardly justified.

It is not possible, or at least not practical to differentiate para-typhoid bacilli into human and animal types.

Experimental animals such as guinea pigs, rabbits and white mice, are susceptible to the virus of foot-and-mouth disease.

The rapid development of icterus in some cases appears to indicate a breaking down of red blood cells in the blood stream.

SUPPURATIVE LYMPHANGITIS

I am treating a mare weighing about one thousand pounds, which started like a case of lymphangitis.

Half of the udder and the lymph vessel down the inside of the right leg were swollen. The temperature was 104° F., breathing accelerated, pulse about 60, full and strong. The pressure from bathing the leg caused quite a little pain. She had little or no appetite.

Treatment. An aloetic cathartic and also the usual sedatives and diuretics were administered.

The leg was bathed twice a day with hot water, then wiped dry and a mild liniment applied. She was kept quiet and allowed plenty of fresh water to drink.

since the acute symptoms disappeared.

Since the acute symptoms subsided I gave Fowler's solution in one ounce doses three times daily and potassium nitrate in dram doses three times daily and also some sulphate of iron and potassium dichromate in five drain doses three times daily. She does not seem to improve except as to her appetite which is now good and she seems to feel good in general.—Anon.

Reply: You are dealing with a case of suppurative lymphangitis. In your patient the infection started in the inguinal lymphatics and there is no doubt that there is and has been almost from the start a large abscess in the inguinal region and all the drugs in the pharmacopea will not correct the condition. However, a scalpel properly used will quickly right the ailment.

Plainly speaking, you will have to make a good liberal opening, usually one to four inches in length is required to properly drain this region, and permit the escape of sloughed tissue. Before you make this incision, just examine the inside of the thigh region of a normal animal and locate the large superficial veins which should be avoided in making the incision.

Do not think because the tissue at this point is firm and hard that there is no pus. You may have to go through three or four inches of tissue to strike the abscess which is always a large one. However, so much time has elapsed in your case that the pus may be partly absorbed or it may be inspissated.

A tick, the Ixodes holocychus, is capable of producing a progressive paralysis in animals. It has been shown that even one of these ticks may produce paralysis and death.

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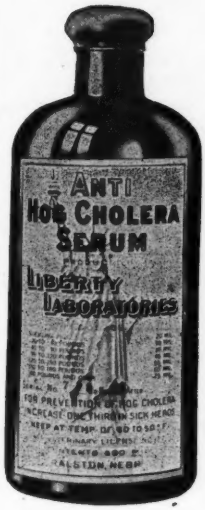

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Looking Backward

A Look Into the Past Unfetters the Mind, Gives a Clearer Conception of the Present, and Tends to Strengthen Our Confidence in the Future

THE A. V. M. A.

It was Nashville in 1897.

F. H. Osgood, of Boston, was the president.

Sesco Stewart, of Kansas City, was the secretary and was re-elected.

D. E. Salmon, chief of the United States bureau of animal industry, was the president-elect.

The officers of the association served without compensation.

The president recommended that the annual dues be reduced to $3.00.

A. T. Peters, of Lincoln, Nebraska, was elected vice-president.

The cost of publishing the proceedings was estimated at $1,150.00.

W. H. Dalrymple read a paper on "The Veterinary Field in the South."

C. A. Cary presented the subject of osteoporosis of horses.

Dr. Dalrymple recommended the desirability of dividing the association into sections. The recommendations were adopted 12 years later.

Editor Mohler already in the bureau service was stationed at San Diego, California.

Twenty-three applicants were elected to membership, among whom were E. M. Ranck, G. R. White and M. Francis.

The association had 328 members in good standing and the annual dues including a copy of the annual report was five dollars. Later they were reduced to three dollars.

Among the prominent members present who are now living were: A. H. Baker, Tait Butler, C. A. Cary, W. H. Kelly, W. H. Lowe, M. H. McKillip, S. B. Nelson, W. B. Niles, A. T. Peters, E. H. Shepard, and W. L. Williams.

OTHER NEWS—25 YEARS AGO

G. A. Johnson was appointed city meat inspector of Sioux City, Iowa.

W. L. Williams passed the examination of the New York State board of veterinary examiners.

Leonard Pearson was appointed dean of the veterinary department of the University of Pennsylvania.

E. H. Pritchard succeeded T. L. Armstrong as president of the Indiana Veterinary College.

John W. Adams was made professor of surgery and obstetrics of the veterinary department of the University of Pennsylvania.

The New York State Veterinary College received a public appropriation of $30,000 for maintenance.

The city board of health of Philadelphia came out strongly in its annual report against the sale of milk in bottles.

In a political shakeup in Kansas N. S. Mayo lost his position as professor of veterinary science in the agricultural college.

The governors of Illinois and of Tennessee both appointed non-graduates to the office of state veterinarian in these states.

C. J. Marshall was among the applicants who took the examination for the position of city veterinarian of Philadelphia.

The Royal Veterinary Society and Academy of Italy publish an article about the parasiti-

LOOKING BACKWARD 25 YEARS

cide properties of carbon bisulphid in the treatment of bots.

M. E. Knowles was appointed state veterinarian of Montana by Governor Smith. One of his first official acts was a recommendation to establish a quarantine against the neighboring states to prevent the spread of sheep scab.

C. J. Sihler, government inspector in charge of the Kansas City meat inspection service, was transferred to Tennessee to take charge of hog cholera eradication work. S. E. Bennett was transferred from Milwaukee to Kansas City to fill the vacancy.

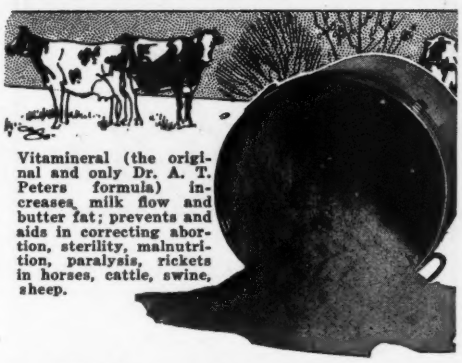
D. S. White, Ohio State university, replying to the state cattle commissioner who wanted rigid tuberculosis regulations enacted prematurely, said that the danger from milk and meat was not as great as is claimed by some and that the tuberculin test is not reliable enough to warrant the wholesale slaughter and waste its advocates encouraged.

Nieman, a German bacteriologist, announced that the blood serum of nanny-goats mixed with tubercle bacilli would cure tuberculosis in humans, and Edgington, colonial bacteriologist of South Africa, claimed to have discovered the microbe of rinderpest.

Dr. J. J. Smith, a graduate of the American Veterinary College, in the class of 1879, contracted anthrax while in attendance upon some cattle and horses affected with that disease at Chambersburg, Pa., and died September 7, 1899. Dr. Smith was regarded as one of the best veterinarians of his day.

The bureau of animal industry was created by act of Congress May 29, 1884. Among its cardinal achievements are: (1) eradication of pleuro-pneumonia; (2) eradication of foot and mouth disease; (3) eradication of tick fever from wide areas; (4) control of hog cholera; (5) an elaborate system of meat inspection; (6) discovery of the anthelmintic properties of carbon tetrachlorid.

The one outstanding satisfaction derived from looking backward arises from the fact that the past also had its imperfections.



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CALCAREOUS LIVER IN A MARE

I desire some information as to a horse, which I was called on to treat yesterday. Just what I may call it? Is it secondary or primary and what would cause such a condition?

History: The owner claims for the past three years that the animal suffered ten day or two week intervals; that she would get up and would not eat well, but showed no pain. Then after this would flesh up again and work as good as ever.

She was a mare ten years old, weight 1100 pounds, and always has lived under good surroundings. Three weeks ago she was turned out to pasture. Yesterday she was caught up as they noticed she was falling off in flesh.

When I saw her she was down but we managed to raise her.

All the symptoms she had resembled those of an acute case of tetanus: her tail elevated, arched up on the toes, pulses wiry and a temperature of 107°. She seemed to be sore all over, but on palpation in region of the liver seemed no more sore to the touch than on the head. The eyes were so bruised that they did not indicate much, but the mucous membrane of the mouth was cynotic. She could not open the jaws and sucked water through the teeth. There was no enlargement in the region of the liver. I gave her a grain of strychina and believe hastened her death.

Post Mortem: The stomach was loaded with bots. The liver weighed forty pounds and was hard and its capsule was grey or rather granite color and the cut surface was spotted. It cut like cement just starting to set. The pancreas was also calcified and appeared much like the liver. There were no parasites present anywhere except in stomach. The blood was nearly black.—H. O. C., Ill.

Reply: In our opinion, the cause of death was cirrhosis of the liver, the cause of which might have been parasites or bacterial invasion of that organ.

Occasionally horses suffer from tuberculosis of the liver and your reference to the calcified condition suggests this possibility, although you do not state whether the calcification was of the character usually found in that disease.

Dr. B. H. Brooks, of Riverton, Iowa, reports that an outbreak of hog cholera can reasonably be expected this year.

Discussions, News, Personals

LOOKING AHEAD*

By J. S. Koen, Bloomington, Illinois

"One of the greatest blessings of mankind is that we are not permitted to lift the veil that obscures our view and prevents our knowing what the future has in store for us. . . ."

"The clients of yesterday were trained only by experience; the client of today is a different individual. He also has enjoyed the benefits of a college education and has had years of scientific training, during which time he acquired more veterinary knowledge than the veterinarian of yesterday. To serve him you must show far greater training, knowledge and ability than he. . . ."

"You must be physician to the horse and the cow; the sheep and the swine; the dog and the cat; the chickens and the pets; and in addition you will be required to become a skilled animal surgeon. . . ."

"Two forces have preyed upon the farmer to the detriment of ourselves. One has been the traitorous commercial veterinarian who for the purpose of lining his pockets with gold has been willing to sacrifice the interests of the profession and the public. The other is the overzealous county agent who would have the farmer believe they no longer need the services of the veterinarian. These two forces have preyed upon the farmer with false propaganda until in some instances his confidence in the veterinarian has been shaken. But the destiny of the veterinary profession rests not in the hands of a few traitors within our ranks nor a few county agents without. The treachery of those who have been honored by the profession is proving a stimulus for closer cooperation among us. The false propaganda will fail as the public comes to know the truth. Our destiny is in our own hands. . . .

"The practitioner will always be the backbone of the profession. Upon him rests the great burden of our professional existence. . . .

"The bureau veterinarians represent a second group. Their work is of a high order and the opportunities for advancement are many. I

*(Excerpt from an address delivered at the commencement exercises of the St. Joseph Veterinary College, 1922.)

(Now turn to page 583)

LIEUTENANT LLOYD J. BROWN, V.C., DIES AT FT. DES MOINES

Lieutenant Lloyd J. Brown was born at De Groff, Ohio, February 15, 1887. He graduated from the Centralia, Kans., high school in 1906 and from the Kansas City Veterinary College in 1910.

In 1917 he entered the United States Army and crossed with the American Expeditionary Forces as an officer of the Third Division.

Following the Armistice, he was sent to Germany with the 3rd Army. Returning to the United States he chose to remain with the army and at the time of his death, June 22, 1922, was stationed at Fort Des Moines, Iowa.

His death came as a great shock to his family and friends. He had returned to duty after a sick leave of some weeks, perhaps too soon for his strength, collapsed while on duty and died in the army hospital of heart failure.

The funeral services were held Sunday afternoon, June 25, 1922, at the Congregational church, at Centralia, Kans. The funeral march was played by the Centralia band, music by a mixed quartet. Dr. J. M. Lawson, a former classmate, sang "No Night There." The burial at the Centralia cemetery was conducted by the Armstrong-Moyer Post, of the American Legion, with full military honors. Veterinarians attending the funeral were: Dr. L. T. Richards, of Parsons, Kans.; Drs. Lawson and

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FOUL OR DISCHARGING SORES
FISTULA OF THE WITHERS
HOG CHOLERA
(As a spray to keep down odor and flies for superficial sores—for diarrhoea)
GALLS (Harness or saddle)
GREASY HEEL
HEALING: ASTRINGENT ANTISEPTIC
HEMORRHAGE
MANGE
OLD WOUNDS
POLL EVIL
PROUD FLESH
ROUP
SCRATCHES
STREET NAILS, etc.
STYPTIC
THRUSH
VARIOLA (Cow Pox)

Crandall, of Seneca, Kans.; Dr. H. C. Gale, of Clyde, Kans.; Drs. C. H. Burdett and Cecil Wilhart, of Centralia, Kans.

Dr. Melville Thompson Seay, assistant state veterinarian, of Clemson College, S. C., died at Columbia, June 19, from infection following a wound sustained while swimming, and was buried at Glenwood Cemetery, Washington, D. C. Dr. Seay was an officer of the veterinary corps, A. E. F., and is a member of the American Legion.

Dr. John Shull, of Trenton, New Jersey, said to have been the oldest veterinarian in the United States, died at his home in that city, July 9, 1922, at the ripe old age of 97 years. He was an officer in the army during the Civil War with the rank of captain.

Dr. J. F. Kyle, of Springfield, Ohio, died at the City Hospital of that city July 14, from injuries sustained when a team of horses ran away with a mowing machine which he was operating on his farm near that city.

The oldest known living thing is a Bo-tree in Ceylon, planted 245 years B. C. It is 2,167 years old and was planted as a twig taken from the tree under which Buddha (568-488 B. C.) received his spiritual awakening.

Major J. R. Shand, station veterinarian at Fort Oglethorpe, Ga., is on leave and is touring the northern states in company with his wife, visiting friends and relatives and will include the A. V. M. A. meeting at St. Louis in his itinerary. Major Shand graduated from the Chicago Veterinary College in 1907, entered the military service soon after and has spent most of his professional life in the Orient.

Dr. J. H. Cock dairy herd inspector for the health board of Kansas City has resigned to accept a position with the B. A. I. with station at Omaha.

Dr. W. B. VanCleave of Christman is veterinarian for the Vermillion (Illinois) county farm bureau, and will take charge of the tuberculosis work of that county.

Dr. P. O. Cooper of Friend, Nebraska, and Miss Agnes Stewart, daughter of Mr. and Mrs. Hugh Stewart, were united in marriage July 12, 1922.

CHIEF VETERINARIAN OF THE PHILIPPINES ON VISIT TO THE UNITED STATES

Dr. Albert Youngberg, who is the chief veterinarian of the bureau of agriculture of the Philippine islands, in company with his wife, is spending a long vacation in the states visiting friends, institutions and associations throughout the country. They left the Philippines in March and will not return until October of this year, and are including many places and events in their itinerary. Dr. Youngberg was graduated from the Ohio State university in 1907 and is a son of the late Dr. Albert Youngberg, of Minnesota, who was well known to the veterinary practitioners of the Northwest during three decades.

Dr. F. D. Sexton, of Chicago, has opened an office at Clintonville, Wisconsin. He is graduate of the McKillip Veterinary College.

Dr. P. L. Cady, retiring president of the Missouri Valley Veterinary Association, in his annual address predicted a shortage of veterinarians in the near future, unless something is done to increase the attendance in the veterinary schools.

Dr. C. C. Wang, a native of China, who graduated at Ames this year, will return home to help establish a veterinary school in his country. He returns proud of his diploma and license to practice in Iowa.

Dr. Abner Stafford has moved from Huntsville, Mo., to Renwick, Ia., where he has become associated with Dr. Overbaugh. Both are graduates of the St. Joseph Veterinary College.

Dr. W. R. Latta, formerly a practitioner at Orangeberg, S. C., and later city food inspector of Savannah, Ga., has moved to Martinsburg, Ind., where he has opened an office for a general practice.

Smyth and Bricker report the occurrence of 123 cases of anthrax in the employees in 76 tanneries during a period of 12 years. During this time there were approximately 13,500 men employed in the 76 tanneries. During one 5 year period, the morbidity rate from anthrax alone was almost 2%.

The list on the preceding page was prepared, item by item, as veterinarians found additional uses for FER-SUL and FER-SUL-INE, and reported their successes to us.

The list is still growing. New items will be added whenever we get positive reports to warrant. We want no one to put any money into FER-SUL or FER-SUL-INE until he has first made a satisfactory test of them.

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DISEASES OF THE UDDER

(Concluded from page 522)

being careful to keep between the two halves of the udder.

There are but few nerves and blood vessels on the median line and if the dissection is done carefully the amount of pain and hemorrhage is slight. After the two halves are divided you can work around the superior border of the gland with blunt scissors or the hand until the blood vessels are reached. These should be ligated securely and then severed. The separation can then be continued around the outside of the gland and downward toward the teats. If the external pudic artery has been ligated there is but little hemorrhage when the milk vein is severed; the latter may be easily ligated if thought necessary. A skin incision is then made about two inches laterally from the teats and the gland drops out. The cavity is packed and sutured. If the whole gland is involved, the other half is removed by the same procedure.

ASSOCIATION MEETINGS

UNIVERSITY OF MINNESOTA SHORT COURSE

The short course for veterinarians held in conjunction with the semi-annual meeting of the state association and given by the University of Minnesota, July 12, 13 and 14, 1922, at University Farm was attended by about 250 veterinarians for whom a program of exceptional interest was provided. Among the contributors outside of the state who participated were: Dr. J. G. Rutherford, Ottawa, Ontario; Professor J. N. Frost, Cornell university; Dr. B. H. Ransom, United States bureau of animal industry; Professor O. V. Brumley, Ohio State university; Dr. H. Lothe, Waukesha, Wisconsin; Professor L. Van Es, University of Nebraska; Dr. E. A. Cahill, Zionville, Indiana; Dr. H. Jensen, Kansas City, Missouri, and Dr. L. A. Merillat, Chicago, Illinois.

MICHIGAN STATE MEETING

The summer meeting of Michigan State Veterinary Medical Association held at the agricultural college, East Lansing, June 28-30, 1922, has been pronounced the best ever, thanks to the "pep" injected into the ceremonies by its ambitious, untiring officers.

The first day was devoted to a literary pro-

(Continued on Page 573)

ASSOCIATION MEETINGS

gram containing a wealth of subjects of current interests, among which are: "Azouturia and its Treatment" by Dr. L. C. Palmer of Brooklyn; "Forage Poisoning" by Dr. B. A. Perry, Hastings and discussed by Dr. G. M. Thorndyke of Alto; "The Horse Situation in Michigan" by Dr. Judson Black of Lansing; "Laminitis and its Treatment" by Dr. E. V. Cavell of Northville and discussed by H. H. Carpenter of Detroit; "The Mallein Test" by Dr. M. Olthouse of Jackson and discussed by Dr. Lee Davisson of Manchester.

On the afternoon session of the same day the session was featured by papers and discussion by Dr. G. W. Cronkite of Saginaw; J. C. Whitney of Hillsdale; F. E. Stiles of Battle Creek; F. K. Hanson of Lansing; C. C. Dauber of Sturgis and F. M. Blachford of Brighton. Professional and sanitary questions predominated.

Addresses entitled "My part in My Husband's Practice" made by Mrs. J. E. Wurm of Pigeon and Mrs. C. C. Schafer of Linden were the chef d'ouvres of the day.

The events of the second day beggar description. It was a day of entertainment, emulation, contests, pandemonium, carnival and over-eating. There was a game of indoor baseball between practitioners and "scientifics," a contest for supremacy as to who was the biggest liar, who was the fattest, the skinniest, the handsomest and the homeliest man in attendance; a prize for he who came the longest distance by auto and for the one who brought the largest family.

(The capable secretary evidently desiring to remain a resident of Michigan has not officially announced the winners of these several contests.)

The thirds day's session was opened by an address by President David Friday of the Michigan agricultural college after which the literary program was continued with the following papers: "Acute Interstitial Enteritis of Fowl" by Dr. E. T. Hallman, discussed by Dr. J. H. Strafseth both of the M. A. C.; "Pathology of Lymphangitis" by Dr. F. W. Lambie of Midland, discussed by Dr. A. McKercher of Lansing; "Milk Inspection" by T. H. Broughton, director of the bureau of diarying, state department of Agriculture, Lansing, discussed by Dr. E. J. McLachlan of Jackson.

In the afternoon Dr. U. G. Houck, assistant

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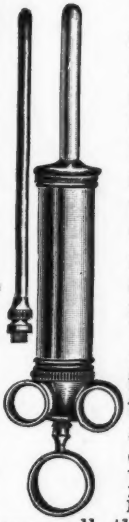

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ASSOCIATION MEETINGS

chief of the bureau of animal industry, Washington, D. C. gave an address on "The History of the Bureau of Animal Industry," and Dr. E. P. Shafter, inspector in charge of the federal meat inspection service at Detroit spoke on "Meat Inspection with Particular Reference to Small Municipalities"; and Professor H. R. Smith live stock commissioner, National Live Stock Exchange, Chicago, discussed the subject of "National Tuberculosis Eradication Campaign."

Dr. H. J. Stafseth demonstrated typical reactions to the tuberculin test in fowls and Professor L. H. Cooledge demonstrated the hydrogen-ion method of determining the keeping qualities of milk at the Bacteriology building Thursday and Friday mornings.

The ladies were entertained by luncheons, receptions and picnics and a nurse was provided to care for the children, lest anything be missed.—Official Reporter for VETERINARY MEDICINE.

The Veterinary Medical Association of Oregon, Washington and British Columbia, met in joint convention at Vancouver, B. C., July 21-22, 1922. The attendance was sixty with a program of exceptional interest, a detailed report of which will be published in a future issue. (See page 526.)

MAINE VETERINARY MEDICAL ASSOCIATION

The members of the Maine Veterinary Medical Association met at New Meadows Inn, Bath, Wednesday, July 12, 1922.

The members and their wives arrived from different parts of the state at noon and sat down to a shore dinner for which the Inn is justly famous. The dinner was followed by a social hour on the lawn.

The ladies then departed on a shopping tour, which was unique in the history of such tours, as they spent no money, the stores were closed.

The meeting was then called to order and much routine business disposed of.

Dr. R. E. Libby, of Richmond, and Dr. J. W. Baker, of Fort Kent, were elected to membership.

The association endorsed the proposed anesthetic law which the Blue Cross Society of America is endeavoring to legislate, this proposed law will make it unlawful to per-

ASSOCIATION MEETINGS

form any painful, major or minor operation on any animal without the use of a general or local anaesthesia

---

Dr. J. B. Reidy gave an interesting and instructive report on the tuberculosis eradication conference at Hartford, Conn., last month. It was the opinion of medical research men present at that meeting that bovine tuberculosis could under the present system of testing be entirely eradicated from cattle.

Dr. P. R. Baird presented a paper on "Fracture of the Os Suffraginis."

Attorney Cyril M. Joly gave a talk on "Rights and Liabilities of the Veterinarian." This talk showed that the speaker was well versed on the subject and held the close interest of the members present, in recognition of which Mr. Joly was elected to honorary membership in the Association.

Drs. A. Joly, A. J. Neal and Pres. C. F. Davis were appointed a committee to investigate reported irregularities in applying the tuberculin test for interstate shipment.

After a lengthy discussion it was voted that a committee of five be appointed to meet and confer with government and state officials in an effort to evolve new policies in regard to tubercular eradication. It was the concensus of opinions of those present that the public should pay for the tuberculin test as they are ones to receive the protection and benefit.

Mr. H. M. Tucker, of Augusta was elected to honorary membership.

Next meeting to be held Oct. 11, in Augusta.
—P. R. Baird, Secretary.

SECOND INTERNATIONAL CONGRESS OF COMPARATIVE PATHOLOGY POSTPONED

Information has been received from Prof. E. Perroncito, President of the Second International Congress of Comparative Pathology, that this congress which was to have convened at Rome, Italy, September 20, 1922, has been postponed because of unforeseen circumstances that make it impracticable to hold the meeting this year. It is probable that arrangements will be made for the convention of the congress at Rome in the spring of 1923. The date of meeting when decided will be given in a later announcement.

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ASSOCIATION MEETINGS

THE FREE-TEST MENACE

The New York State Veterinary Medical Association passed resolutions at its annual meeting, July 26, deploring the transgression of state and federal authorities upon the field of the practitioner, the full text of which will be published in the October issue.

NORTH DAKOTA VETERINARIANS HOLD TWENTY-FIRST ANNUAL CONVENTION AT FARGO

The North Dakota Veterinary Medical Association held a very enjoyable and interesting session on the days of July 18th and 19th. The place of meeting was at the Veterinary Building of the Agricultural College.

The principal speakers on the program were Dr. C. P. Fitch and Dr. W. L. Boyd, of the University of Minnesota, and Dr. J. N. Frost, of New York. Dr. Fitch spoke upon the subject of "Bovine Infectious Abortion." Dr. Boyd handled the subject "Sterility," and Dr. Frost discussed "Diseases of the Udder." These eminent authorities presented their respective subjects in a clear, concise manner and each address was followed by lively discussion.

Illustrated Lecture by Boyd

Dr. Boyd made use of a set of lantern slides to illustrate part of his lecture and also demonstrated the method of diagnosis and treatment of sterile cattle upon a group of six animals taken from the college herd. A pure bred Belgian mare was also examined for sterility.

Dr. W. F. Crewe, state veterinarian, and Dr. H. H. Cohenour presented an excellent report on the progress being made in the tuberculosis eradication work being carried out in the State and a general discussion followed this report.

The following officers were selected to head the association for the following year: Dr. Vego Mikkelson, of Starkweather, President; Dr. A. F. Elliott, of Milton, Vice-President; Dr. R. S. Amadon, of the Agricultural College, Secretary, and Dr. B. C. Taylor, of Hillsboro, Treasurer.

The meeting was adjourned late in the afternoon of the 19th, and many of the members went out to the fair grounds to view the exhibits of the North Dakota State fair, which was being held the week of the 17th to the 22nd.

All in attendance at the meeting expressed

ASSOCIATION MEETINGS

great satisfaction with the program presented and plans are already under way for a program of equal quality next year.—R. S. Amadon, Secretary.

The South Carolina Association of Veterinarians held their thirteenth annual meeting in Charleston as a surprise to the oldest member, Dr. Benj. McInnes, who has been practicing in Charleston for many years.

The meeting was well attended and some very instructive papers were read and discussed.

The banquet in the evening was enjoyed by many ladies as well as the members.

The second day was given up to trips over the city, to the beaches and surf bathing.—M. R. Blackstock, Sec'y.

The Wisconsin State Veterinary Medical Association held its semi-annual meeting of 1922 at Marinette, July 19. About fifty members were present among which were State Veterinarian Dr. O. H. Eliason, Dr. T. H. Ferguson, Dr. T. J. Purcell, Dr. A. T. Olson, Dr. B. A. Beach, Dr. J. P. Kline, Dr. J. Tomesson and Dr. D. R. Edwards. The banquet held in the evening was featured by an illustrated lecture on tuberculosis by Dr. Purcell. The officers are Dr. H. E. Horel, of Augusta, president, and Dr. O. H. Eliason, of Madison, secretary-treasurer.

The Northwestern Illinois and Southwestern Wisconsin Veterinary Medical Association held a meeting and picnic for its members, their families, and visitors, at Krape's Park, Freeport, Illinois, Tuesday, August 15. The officers of this association are: Dr. B. F. Swingley, president, and Dr. Roy E. Kluck, Forreston, Illinois, secretary-treasurer.

The Florida State Veterinary Medical Association met at Orlando July 7 and 8 when plans were laid to secure the enactment of laws regulating veterinary practice in that state. Florida is one of the few remaining states without regulatory laws.

Dr. V.Mikkelson of Starkweather was elected president of the North Dakota Veterinary Medical Association at the recent annual meeting held at Fargo. The other officers of the

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ASSOCIATION MEETINGS

association are: Dr. A. F. Elliot, Milton, vice president; Dr. R. S. Amadon, Agricultural College, Secretary; and Dr. B. C. Taylor, Hillsboro, treasurer.

Drs. C. P. Fitch and W. S. Boyd, of the University of Minnesota, and Dr. J. N. Frost, of Cornell University, participated in the program of the North Dakota Veterinary Medical Association at Fargo, July 18 and 19.

NEW YORK CITY ASSOCIATION

Mr. I. C. Brenner, advertising manager of Veterinary Medicine, was the speaker of the evening. His talk was a resume of his acquaintance with veterinary matters when he made a tour of the United States in the interests of the journal he represents. While on this tour he called on over 8,000 veterinarians. Speaking of present conditions he cited some of the observations of the editorial staff who think the live stock situation is improving in the Middlewest and who wish to appeal to the profession to work side by side with the stock owners. It is their conviction that stock raising is promising and that the heavy draft horse will not be replaced by the tractor. Mr. Brenner believes that the veterinary business is as good as any other at this time.

Dr. George Goubeaud reported similar cases which he thought were poliomyelitis.

Roaring in a Dog

Dr. H. K. Miller reported a police dog that seemed to be affected with a laryngophlegia similar to roaring horses. Under excitement during the last two weeks it shows a dyspnoea much the same as horses affected with laryngeal hemiphlegia. The case is under observation and will be operated upon if the condition proves to be chronic.

Accidental Chiropractics

Dr. George Gannet reported a remarkable case of a collie dog apparently hopelessly paralyzed that was suddenly cured by an accidental fall, indicating, he says, that the trouble had been due to a vertebral luxation.

Anesthesia in Dogs and Cats

Dr. A. Slawson discussed the subject of etherization of dogs and cats, pleading for the universal use of ether in all operations, even in the castration of males. He believes that ether is humane and safe, and a prevention of shock. The one necessary precaution in cats

ASSOCIATION MEETINGS

is to see that the bowel movements are free. "Never wrap a cat in a blanket nor press upon the chest, but hold its legs and administer the anesthetic slowly," said the speaker, "and be sure to give only a milk diet for two weeks."

He ligates the horns with cat-gut and does not recommend the emasculator, dresses the wounds dry and removes the stitches after five to six days.

Dr. E. B. Ackerman anesthetises cats in a glass cabinet. He puts the cat in the cabinet, soaks a sponge with ether and drops it in, and finds that by this method there is no stage of excitement, and that the state of anesthesia is easily observed.

Rickets with Spinal Pressure

Drs. Miller and Zepp exhibited a Dane dog five months old suffering from paralysis of the legs. The muscles were atrophied and the epiphyses enlarged. The dog had been under observation for eight weeks during which time the temperature had varied between 100° and 101° Fahr. The bowls were generally normal and the appetite good. During the eight weeks there was an improvement lasting two days during when it stood up for a short time, only to fall down again.

It has been treated for rickets, including, vitamine B, tonics and electricity. Dr. Reid-Blair pronounced the case one of rickets with spinal pressure.

Supernumerary 1st Premolar in a Horse

Dr. Ackerman also reported a horse that had two wolf teeth on the same side of the jaw, extracting one, only to find another a few days later, located just above the first one.

Major Jewel Represents the Veterinary Corps

Major C. H. Jewel of the veterinary corps of the army spoke on the advantages of the reserve corps service now open to civilian veterinarians, urging the veterinarians of the 2nd corps area to send their applications to him at Governor's Island.

Acute Jaundice in Horses

Dr. W. H. McKinney and President McKellar reported outbreaks of a hyperpyretic condition in several stables that seemed to be acute jaundice. The ailment attacks suddenly, the temperature is very high and the mucous membranes very icteric. The cases gradually recover.

(May Meeting)

The regular monthly meeting of the New York City Veterinary Association was held at the Veterinary College, Wednesday evening, May 3, 1922.

Dr. Wilfred Lellmann, professor of pathology, veterinary department, New York university, read a wonderfully interesting paper on internal secretions.* Dr. Lellmann has kindly consented to read a series of papers on this relatively new subject as it is all together too technical to attempt to review the literature on it in a paper that would be suitable for an evening program. After reading his paper he explained extemporaneously in detail some of the present theories on the subject and also showed some photographs and sketches, qualifying reports of experimental data. Drs. C. W. Shaw, George Berns, Hermann Kock and Victor Carabba commended presentation.

Dr. Berns spoke quite enthusiastically of the possibilities of endocrin gland therapy clearing up many of the obscure ailments of the lower animals, such, for instance, as osteoporosis. Speaking of the dose of thymus extract, essayist stated that children take a half grain three times daily for a time, when it may be increased. Older children, he said, take proportionally larger doses. Small doses of sodium iodid were also said to have beneficial

(Continued on Page 586)

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(Concluded from page 513)

sight drafts, follow-up drafts and all in order in the stage and it is well to remember that the telephone is very effective during the reminder and reproach stage.

The fourth or the discussion stage usually comes after the account has been placed in the hands of the collection man himself. He will endeavor to find out what is the trouble, draw out some explanation of delinquency and finally decide what final action shall be taken for the disposition of the account. At this stage, the customer may be resold or the customer may have to be traced or some defective remittance taken care of or some alleged complaint adjusted.

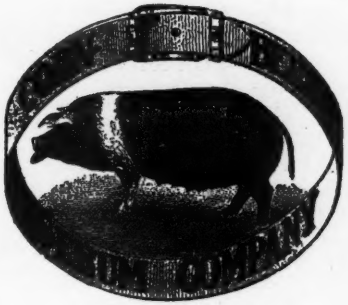
Finally the account comes to the unfriendly stage of a collection in which it must be placed as a matter of sale or placed with an attorney for final suit. This is one of the most important stages, and when placed in suit, if all of the previous information which has been gathered in the other stages and prior to the opening of the account has been gathered together, it makes it possible for quicker action on the part of the attorney, and the quicker the action, the more effective it will be.

Too much importance cannot be placed upon the information given the attorney. The facts are all familiar to you. The character of the person is familiar to you. The property or assets of the person are familiar to you. Lay all of these facts before the attorney at once. This will save many accounts, save much time, and let the attorney devote his energy to actual collection rather than devoting his time to covering ground already covered by you. The quicker an account is placed the better the chance.

In handling a collection, it is possible through the Credit Men's Association, through the commercial lawyers, through the various law lists, to secure attorneys who are prompt, who are bonded, who are efficient, and with the protection given, the final loss of the account may be very small and the balance turned back to the capital of the individual or the firm through a collection of the old account would be very material.

Such an organization as yours might develop a system similar to the other organizations and through your secretary place all of your collections so that in course of time there will develop for you attorneys throughout the state available for your protection and for the collection of your accounts.

THE



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POSITION WANTED—Graduate Veterinarian desires position in Ohio as practitioner. Later partnership or purchase of practice. Give full details, stating salary. Best of references given. Married. Address 691, care of VETERINARY MEDICINE.

FOR SALE—Paying mixed practice in Northern Illinois. Good roads. Good pay. Good prices. $150 for quick sale for practice, drugs and office fixtures. Address No. 689, care of VETERINARY MEDICINE.

Veterinarians—I offer a few of fine training and experience—and anxious for connection with firms, schools, etc., also as assistants. Any available positions open for Graduate, Experienced, referenced Veterinarians. No charge for service. F. V. Kniest, Peters Trust Bldg., Omaha, Nebr.

ASSISTANT WANTED—A live wire, honest, honorable and industrious. In Central Illinois. Address No. 690, care of VETERINARY MEDICINE.

MISCELLANEOUS

LET US TAN YOUR HIDE—Cow and Horse hides for fur coats and Robes. Cow and Steer hides into Harness or Sole Leather. Catalog on request. We repair and remodel worn furs; estimates furnished. The Crosby Frisian Fur Co., Rochester, N. Y.

"QUICK COLLECTIONS" — Everywhere. Live wire firm! Established 27 years. William H. Dodd, 87 Nassau St., New York. Don't wait, send us your bills today!

NICKEL PLATING—Every Veterinarian has some instrument which needs replating. Send them to us. We will make them like new at a moderate cost. Nelson Plating Co., Morris, Illinois.

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The identification tag for animals that IS satisfactory. Used by the B. A. I., most states, and hundreds of veterinary practitioners. Write for sample and price. An ear mark for every purpose. M. H. STOLL. Colorado Springs, Col.

(Concluded from Page 565)

would recommend after 15 years of experience with the B. A. I. that each of you spend at least one year in this service regardless of your intentions thereafter. You will find it an experience of estimable value to you. . . .

"Teaching forces need to be strengthened and enlarged. Within a short time there will be a demand for teachers we will not be able to fill. . . ."

"The commercial field holds out many opportunities for veterinarians of character who are strong enough to resist the temptations that beset one in that line of endeavor. . . ."

"I also see a tendency toward the employment of county veterinarians, not to supplant the local practitioner but rather to supplement his efforts and bring about a closer co-operation between him and his clients."

SUMMER SORES

Rogers in Revue Veterinaire (April 1922) reports that he has found a cryptococcus so constant in summer sores examined that he regards it as the causative agent, but Monnier in a report to the Societe Central de Medicine Veterinaire, without absolutely repudiating these findings, defends the classic facts that the larva of the Habronema musca is found in the great majority of these granulating wounds. He recommends applications of biniodide of mercury as the best treatment.

DEATH CAMAS POISONOUS TO CATTLE

Death camas, of which there are four principal species in the range country of the West, although causing heaviest losses among sheep, are also poisonous to horses and cattle. Under range conditions cattle are seldom poisoned. Horses are frequently made sick, but deaths are rare. A few cases are known where persons have been fatally poisoned by the weed. Children have eaten the bulbs out of curiosity and adults have gathered the plant, mistaking it for the edible sego. The United States Department of Agriculture has not found a remedy for poisoning by death camas, but the deadly species are now recognized, and ranchers may safeguard their flocks.—U. S. Clip Sheet.

The famous public ram of the department of agriculture on the Government Sheep Farm in eastern Idaho is making a high record in prepotency, and is pronounced by stockmen as being equal to the best of the breed.

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In every State in America and Canada practitioners are enjoying the help and convenience of the STRASCO Case. Because of its practical features and durable construction, the STRASCO appeals to all Veterinarians who appreciate real value.

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The 15" STRASCO Case, including partitions and 21 four oz. bottles filled with the most popular STRASCO tablets—

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Shipped Express Prepaid.
It's ready to make a call when it reaches your office.

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Four ounce screw cap tablet bottles, with or without label, 10c each.

When you see this handsome case, inspect its thorough workmanship and practical features, you will be delighted with your purchase.

Merely send us a card, stating whether you want a filled case, or tell us what size empty case you wish.

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Manufacturing Chemists
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Two Models

Every Necessary Adjustment

Locks Rigidly in All Positions

Used in All Leading Canine Hospitals

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Adjusts Quickly and Conveniently

Sanitary—Neat—Strong—Durable

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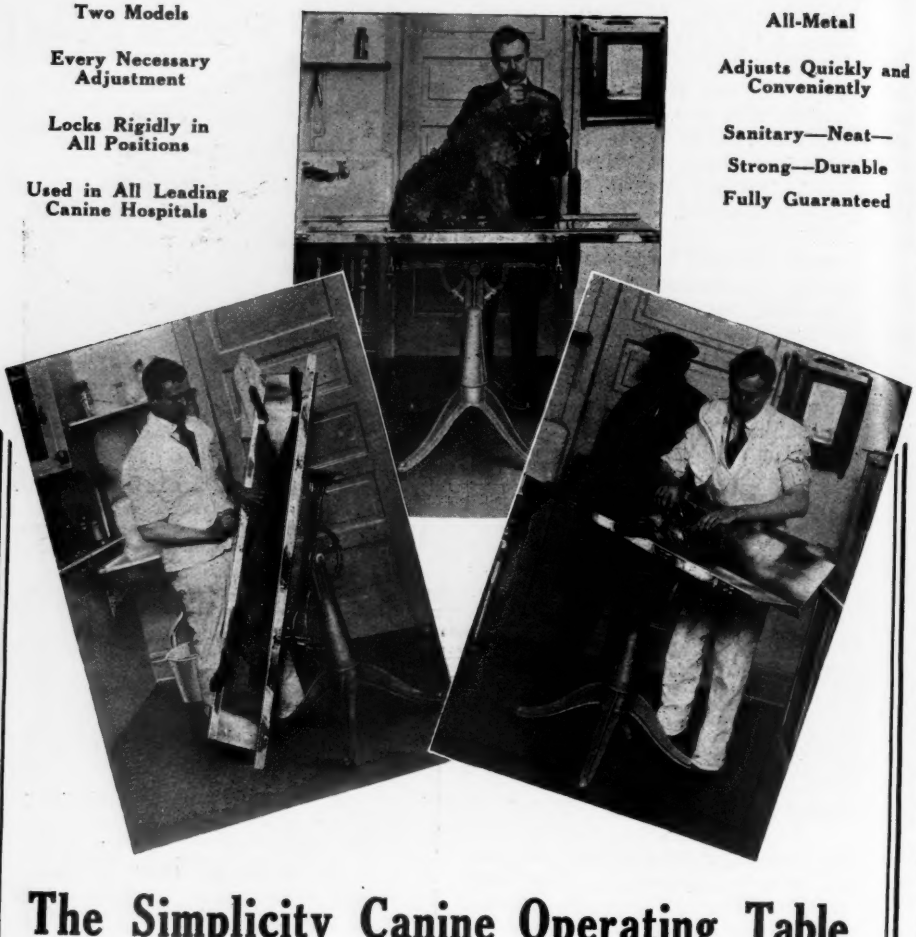

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ASSOCIATION MEETINGS

THE A. V. M. A. CLINIC

On August 30th and September 1st, the A. V. M. A. expects to hold the largest and best veterinary clinic ever held in the United States. Dr. Huggins, veterinarian of the B. A. I. at East St. Louis, and agents of the Stock Yards Company, are arranging accommodation for both the large and small clinics.

The material for the clinic will be so planned that all will be able to see without crowding, and the program will be carried out on a prescribed schedule.

Dr. H. E. Kingman, director, and Dr. S. L. Stewart, assistant director of the large animal clinic, are men who do things. Dr. Flynn, the Kansas City small animal specialist, is going to give the canine practitioner an up-to-date clinical entertainment.

It is expected that those who are not particularly interested in the clinics will attend sessions of the section on sanitary science and police, of education and research at the Planters Hotel during the clinic hours.

In the past, clinics have been thought unsatisfactory because of the inability of the demonstrator to display his work to the whole audience. Realizing this condition, President Kinsley changed the plan to overcome this obstacle. An effort will be made at St. Louis to reestablish the old custom of holding clinics at each meeting.

Those planning the program believe that the arrangement will interest and please the practioners in attendance.

HEMORRHAGIC SEPTICEMIA IN CATS

Three cats disclosed in association with a serious general disturbance inappetance, vomiting, diarrhea, convulsions and died in from two to four days. In two of the carcasses the autopsy revealed a pronounced reddening and swelling of the mucous membrane of the small intestines, swelling of the mesenteric glands and spleen, pulmonary edema, serous pericarditis and punctiform hemorrhages on the epicardium. In the third carcass the lung and the liver revealed lentil sized grayish yellow diffusing foci. Smears made from the internal organs of all three carcasses revealed bipolar bacteria in great numbers. Cultures in pure form were also obtained from the various organs which proved pathogenic to mice.

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GUAILYPTOL

One pint, at	$ 1.25	
One gallon, at	5.50	Prepaid
Two gallons, at	10.25	"
Five gallons, at	26.00	"

Veterinarians have had a hard season the past year and these prices are to enable them to get back, into a good season's coming, with a better chance of a fair profit, for their professional services.

We believe in service, courtesy and speed, nominal cost, and a more than fair consideration in business.

All the graduate licensed vets know the old reliable GUAILYPTOL so it is useless to say much more on the subject. Do not be misled by the many preparations put out containing GUAICOL. There is only one real GUAILYPTOL—its quality and effectiveness has never been in question, and that product is made by the Eucamphine Co. Tried and never found wanting.

EUCAMPHINE

One pint, at	$ 0.70	
One gallon, at	3.50	
Two gallons, at	6.50	Prepaid
Five gallons, at	15.00	"

You can't beat this stock product—it covers a large field for the price.

CORN STATES SERUM

Blood	Clear	Clear Concentrated
$0.93-$1.00	$1.10	$1.40

Virus .....$1.00 per 100 Mil.

Watch for our new fall products. Good quality, and reliable in use. We handle no patent medicines. All products put up by a professional graduated and licensed veterinarian. We will get anything for veterinarians if it is in Chicago's market.

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ASSOCIATION MEETINGS

effect on some of the internal glands and is noted particularly in reducing blood pressure. Thyroid extract has a splendid effect in some cases of gout.

Dr. Reid Blair spoke of how potassium iodid has been so long used for goitre. He has under his care an Aberdeen terrier, which has been treated by him at different periods for the past three years. The dog is now nine years old. When he has periods of exceptional distress from his goitre, the doctor prescribes one grain of potassium iodid twice daily, keeping it up for about three weeks. This usually gives relief for two or three months or longer.

Dr. Carabba reported having treated several cases of dropsy in dogs with thyroid extract, being followed with pronounced benefit.

Dr. Adolph Eichorn spoke of some experiments with pituitary extract, showing its powerful effect on non-striated muscles, large doses producing violent colic in the horse.

Under case reports, Dr. C. W. Shaw reported a dog with a growth in the axillary region, supposed to be cancer.—J. F. DeVine.

*Dr. Lellmann's paper will appear in an early issue of Veterinary Medicine.

The Hudson Valley Veterinary Medical Society will hold its next meeting at Catskill, New York, August 9, 1922. The Secretary is Wm. H. Kelly, of Albany.

At the Short Course for veterinarians given by the University of Minnesota in July, the managing editor of VETERINARY MEDICINE brought out the fact that since the beginning of authenticated history the nations which did not take full advantage offered by the horse industry either perished from the earth or became second rate nations as the penalty for their lack of foresight.

"The swine raiser who attempts to correct sickness with nostrums in non-immune hogs is in no small measure responsible for much of the hog cholera."—B. H. B.

Prompt work of Dr. E. F. Moran, of Ironwood, Michigan, resulted in the stamping out of a bad outbreak of hog cholera caused by the importation of infected hogs into his district.

EVERSION OF THE UTERUS IN A COW

The subject was a nondescript cow about five years old, this being her second birth. I was informed by telephone that the cow calved all right, but had not passed her afterbirth, and was asked if I would come the next day to remove it.

I arrived at mid-day and found her in the recumbent position, unable to rise, and the uterus everted. The placenta had all come away, and as the lacerations did not extend quite through the muscular coat, no sutures were used.

It was a most annoying case to treat as nothing was handy because one had to be sent two miles to get sheets, and the water used to cleanse the uterus, although not polluted, was not pure. The owner himself was disgusted and wanted to slaughter the poor brute. But deciding to treat the case, the uterus was thoroughly washed with soap and weak creolin solution, and then wrapped in a clean sheet.

When the cleansing was finished, the work of returning the uterus began. When I pushed a wee portion in one way, a greater portion would be forced out on the opposite side. I found that I was not making much progress and was about to give up in despair when I got hold of some plain cotton-seed oil and poured it over the thing and tried again. The results far exceeded my expectations. It glided quite gently through the vagina into its position. The hand was introduced to straighten out any folds which might cause a tendency to strain. I noticed, however, that hemorrhage was taking place as my hand and arm was covered with blood when withdrawn.

The cow was now suffering from shock, trembling all over. I had to get a man to put his hand in the vagina while I washed mine, to prepare a hypodermic injection of one-half grain of atropin, which I administered subcutaneously in the region of the neck, and I gave fluid extract of ergot (one ounce in a quart of water per orem), then examined to see if the uterus was still in place. On satisfying myself on that point, I sutured the vulva with tape, left some ergot to be given in one-half wineglassful doses every two hours if bleeding occurred. Only one dose was given, as she soon rose and walked downhill to be turned on the pasture.

The next day she drank heartily and was eating fairly well. Four ounces of Epsom salts were given in a twenty-four ounce bottle of

water, three times that day. The following day I removed the sutures as there was no straining. She had a slight elevation of temperature, for which she was given acetanilid and potassium nitrate on the tongue three times a day.

Ernest F. Jardine.

Basseterre, St. Kitts, B.W.I.

TRAUMATIC PERICARDITIS
By Doque

A Holstein cow in my herd went off her feed during the summer of two years ago for five days. Examination disclosed nothing of importance excepting a temperature that ranged from 103 to 106. Treatment of Tinct. Aconite 15m. and Flext. Bella. Rad. drams one every two hours during day. She was down greater part of this time lying principally on right side well up on Sternum.

Morning of sixth day she arose and went to pasture with rest of herd.

Some months later an abscess formed on inferior part of left flank and discharged a bloody pus for four weeks. Treatment consisted of antiseptic washes. She was pregnant and calved on time and did fine.

She was bred again but aborted at six months but did not miss a meal. Was bred again July 30, 1921. Morning of February 8, 1922, she did not go to the rack in feed lot but stood as if asleep, on being approached she seemed to be surprised and ran to the rack and ate with the rest of cows. After eating I put her in stanchion and examined her. Temperature 103, Respiration, slightly accelerated. Heart, strong and very fast. Pulse, weak. Rumen slightly impacted. Peristalsic wave and murmur absent. Left elbow extended from chest far as possible. Dull heavy sound, on percussion over right lung. Inhalations held several seconds before exhaled accompanied with a grunt. Would eat small amounts of silage and drink some water. On being turned into feed lot she would stand with anterior parts elevated and with head to ground walk backwards. Treatment consisted of natol and linseed oil until she had been given one and one half gallons. Salts, aloes, camboge, calomel, flext, nux vomica, ammonium carbonate powdered gentian, six gallons tepid water with one pound sodium chloride through canula into rumen. Phystogmin and pilocarpin, strychnin and arecolin were given hypodermatically, in broken doses. None of these would establish peristalsic wave or murmur, but I got good results from strychnin and veratrin, one half grams of each. During all of this time there was no defecation.

Also given rectal injections of one gallon warm water and soap every two hours during day for three days.

Morning of February 15th edema of inferior submaxillaris had developed.

No treatment whatever was given on the 15th and 16th. Morning of February 17 the long looked for and expected characteristic splash was established. I destroyed her and on autopsy a nail three inches long was found sticking in heart firmly held by its head in rumen. The reticulum contained various other scraps of iron and tin. The pericardium was firmly adhered to left wall of thoracic cavity and to diaphram and rumen. The heart, pericardium and contents weighed thirty-nine pounds. The exudate had that peculiar strong odor with which we are all familiar.

Good hens may be profitably kept for the laying of eggs for two or three years and they may be kept even longer for breeding purposes.

To the Veterinary Profession Only

TENALINE

A Specific Canine Remedy for

TAPEWORM

Kills and Expels Taenia 20 Minutes After Administration

The ever recurring thought as each case is presented, "What shall I try this time," will be banished after treating one case with

TENALINE

Sold in two ounce bottles, containing about 30 doses, depending on weight of animal.

Price: $1.50 Cash with Order

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R. VICKERS

THE PLAINS, VA. U. S. A.

EPIZOOTIC EYE INFECTIONS IN CATTLE

Sokolowski describes an infectious eye disease which occurred during the last summer among the cattle of various Alpine districts, and which manifested itself as an infectious keratitis. Approximately 30% to 50% of the pasturing animals became affected. The animals have their eyes closed and the lids are edematous. The animals resist the touching of the eyes and the opening of the eyelids. The eye secretion is first clear, later as a rule purulent. According to the depth of the cellular infiltration, the cornea reveals either a cloudy, milk-white or even a pus-yellow infiltration. The conjunctival and sclerotic blood vessels are strongly injected. The cornea feels softer to the touch and shows changes in its volume and curvature; epithelial disc formations, ulcers and abscesses are often present; so much so that perforations and suppurations may entirely destroy the eye. As a rule animals recover within fourteen days without any treatment. According to Sokolowski the infectious agent is contained in the secretions of the eye. The transmission occurs from animal to animal and through intermediate carriers. Deutsch. Oester Tier Woch.

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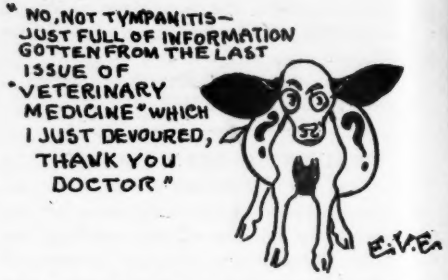

An Inspiration from Dr. E. V. Edmonds, Mt. Vernon, Washington

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Dr. H. K. Cleaver, 42 South 8th Street, Reading, Pa., who has been the victim of a nervous collapse, due to overwork, is gradually recovering and hopes to resume practice very soon.

Dr. B. F. Barber of Fondo, Iowa, has made a wide reputation as a breeder of Poland-China hogs, Holstein-Friesian cattle and Belgian horses.

Dr. J. A. Carlson of Bagley, Iowa, has moved to Davis City.

Dr. R. J. Donohue, state veterinarian of Washington accompanied with Mrs. Donohue and daughter has just completed an 1,800 mile trip through the Okanogan and Methlow Valley country of that state during which he supervised more than 1,000 tuberculin tests. Ninety per cent of the dairy breeders of that district are having their herds tested.

The anti-vivi-sectionists are causing considerable agitation at the present time in Colorado and sufficient signers have been obtained on petition so that the matter of rigid anti-vivi-section laws will be determined by referendum.

The medical and veterinary profession in that state are using all legitimate means to give the proper information regarding the anti-vivi-sectionists propaganda.